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# Bulletin

OF THE NATIONAL ASSOCIATION

OF SECONDARY-SCHOOL PRINCIPALS



## Exploring Improved Teaching Patterns

Second Report on Staff  
Utilization-Studies

SERVICE ORGAN FOR AMERICAN SECONDARY SCHOOLS

THE CONTENTS OF THIS BULLETIN ARE LISTED IN "EDUCATION INDEX"

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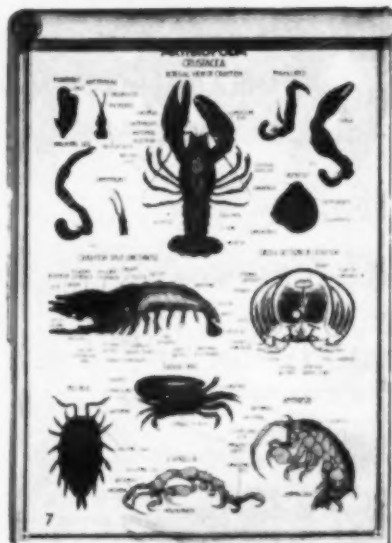


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**SECONDARY EDUCATION—OPPORTUNITY FOR ALL YOUTH**

### **Saturday, February 7**

#### **10:45 A.M.—GENERAL SESSION**

*The Surest Base of Public Happiness*—William H. Cartwright, Chairman, Department of Education, Duke University, Durham, N. C.

#### **2:00 P.M.—GENERAL SESSION FOR JUNIOR HIGH SCHOOLS**

*An Impending Crucial Issue—Implications of National and State Testing Programs for the Junior High School*

**MODERATOR**—Christian W. Jung, Associate Professor of Education, Indiana University, Bloomington, Ind.

#### **PANEL—**

Robert J. Keller, Director, University High School, and Professor of Education, University of Minnesota, Minneapolis, Minn.

John M. Stalnaker, President, National Merit Scholarship Corp., Evanston, Ill.

Henry Chauncey, President, Educational Testing Service,  
Princeton, N. J.

Charles E. Bish, Director, Project on Education of the  
Academically Talented, National Education Association,  
Washington, D. C.

David B. Austin, Professor of Education, Teachers College,  
Columbia University, New York, N. Y.

**2:15 P.M.—GENERAL SESSION FOR SENIOR HIGH SCHOOLS AND JUNIOR COLLEGES**

*Improving the Quality of Instruction and Staff Utilization through the Use of Modern Teaching Aids*—Demonstration of Video Tape, Vu-Graph, Magnetic Teaching Tapes, Television, Teleprompter, Course Films, Slides with Tapes, and other materials in use in junior and senior high schools

Presented by the NASSP Commission on the Experimental Study of the Utilization of the Staff in the Secondary School under the general direction of:

Lloyd S. Michael, Superintendent, Evanston Township High School, Evanston, Ill.; **CHAIRMAN**

J. Lloyd Trump, University of Illinois, Urbana, Ill.;  
**DIRECTOR**

**4:00 P.M.—GENERAL SESSION FOR JUNIOR HIGH SCHOOLS**

*Improving the Quality of Instruction and Staff Utilization Through the Use of Modern Teaching Aids*—

Demonstration of teaching aids presented at 2:15 P.M. General Session for senior high schools and junior colleges will be repeated especially for junior high-school principals.

**7:00 P.M.—ANNUAL BANQUET**

Erwin D. Canham, Editor, *Christian Science Monitor*, Boston, Mass.  
Sam Levenson, nationally-known TV humorist and comedian

**Sunday, February 8**

**1:00 P.M.—TOURS OF HISTORIC PHILADELPHIA**

**4:00 P.M.—RECEPTION. ALL ARE INVITED.**

**8:00 P.M.—GENERAL SESSION**

**MUSIC** by the Southeastern Pennsylvania District Orchestra composed of students from high schools in Bucks, Chester, Delaware, and Montgomery Counties

Address: Raymon Kistler, President, Beaver College, Jenkintown, Pa.

**MUSIC** by the West Point Glee Club, United States Military Academy, West Point, N.Y.

**Monday, February 9**

**9:30 A.M.—GENERAL SESSION**

*Impressions on Science Education in Russia*—Harry C. Kelly, Assistant Director for Scientific Personnel and Education, National Science Foundation, Washington, D. C.

*The Effect of the National Defense Education Act of 1958 on Our Secondary Schools*—Lawrence G. Derthick, Commissioner of Education, U. S. Office of Education, Washington, D. C.

11:30 A.M.—VISITS TO SELECTED SECONDARY SCHOOLS

—TOURS TO PLACES OF INTEREST IN AND AROUND PHILADELPHIA

12:00 NOON—SPECIAL LUNCHEON FOR JUNIOR HIGH-SCHOOL ADMINISTRATORS

*Meeting the Serious Behavioral Problems in Junior High Schools*—William C. Kvaraceus, Director, Juvenile Delinquency Project, National Education Association, Washington, D. C.

2:15 P.M.—DISCUSSION GROUPS

I—*How Can We Improve the Reading Skills and Habits of Junior High-School Students?*

II—*What Are Current Trends in Grouping for Effective Instruction?*

III—*How May Smaller-Than-Usual Student Groups and Individuals Be Taught More Effectively?*

IV—*What Educational Program Is Needed in the Junior High School?*

V—*How Can the Junior High School Best Provide for the Academically Talented Student?*

VI—*How Can the Senior High School Best Provide for the Academically Talented Student?*

VII—*Should the Junior High School Have an Interscholastic Athletic Program?*

VIII—*How Better Motivate the Under-Achiever in the Secondary School?*

IX—*How Effective Are Conduct Codes in Improving School and Community Citizenship?*

X—*How Best To Achieve Administrative and Supervisory Organization in the Large High School?*

XI—*What Are Defensible Bases for the Promotion and Non-promotion of Students?*

XII—*What Are Trends in Providing for Block-Time Classes in Today's Curriculum?*

XIII—*A CURRENT CRITICAL ISSUE IN SECONDARY EDUCATION—Modern Foreign Languages in the Comprehensive Secondary School*

XIV—*What Are Current Trends in Providing Guidance Services for the Junior High School?*

XV—*How Can the School Develop in Students Ways of Practicing Good Citizenship?*

XVI—*In What Ways Can the Program of the Small High School Be Improved?*

XVII—*How Can Faculty Meetings Be Used To Stimulate Professional Growth?*



XVIII—*What Kind of Activities Program for Students in the Junior High School?*

XIX—*What Library Services for the High School in the New Era?*

XX—*What Future Role for the Junior and Community College?*

XXI—*What Are Current Developments in College Admissions Policies?*

XXII—*Are Administrative Competence and Democratic Administration Compatible?*

XXIII—*What Are Some Promising Administrative Practices in the Secondary School?*

6:00 P.M.—COLLEGE DINNER—TEACHERS COLLEGE, COLUMBIA UNIVERSITY

8:00 P.M.—FREE EVENING—NO GENERAL SESSION SCHEDULED

### **Tuesday, February 10**

9:30 A.M.—GENERAL SESSION

Monroe E. Spaght, Executive Vice President, Shell Oil Company,  
New York, N. Y.

Buell G. Gallagher, President, The City College, New York, N. Y.

11:30 A.M.—VISITS TO SELECTED SECONDARY SCHOOLS

—TOURS TO PLACES OF INTEREST IN AND AROUND PHILADELPHIA

12:00 NOON—LUNCHEON—SCHOOL OF EDUCATION, UNIVERSITY OF PENNSYLVANIA

2:15 P.M.—DISCUSSION GROUPS

I—*How Can We Improve the Reading Skills and Habits of Senior High-School Students?*

II—*What Practices in School Discipline Develop Better Student-Teacher Relationships?*

III—*What Are Some Experimental Changes in Class Schedules, Student Groupings, and Team Teaching Being Tried in Junior and Senior High Schools?*

IV—*What Are the Critical Problems That Face the Junior High-School Administrator?*

V—*How Can the Junior High School Best Provide for the Academically Talented Student?*

VI—*National Association of State Directors and Supervisors of Secondary Education*

VII—*What Are Ways of Grouping Students Homogeneously for Effective Instruction?*

VIII—*Should We Give All Secondary-School Graduates the Same or Different Kinds of Diplomas?*

IX—*What Are Current Developments in the Supervisory Responsibility of the Principal in the Senior High School?*

X—*What Are Current Trends in Reporting Student Growth and Achievement to Parents?*

- XI—*What Is the Most Effective Way of Arranging the Length and Use of the Class Period?*
- XII—*What Is the Place of Science and Mathematics in the Comprehensive Secondary-School Program?*
- XIII—A CURRENT CRITICAL ISSUE IN SECONDARY EDUCATION—*Modern Foreign Languages in the Comprehensive Secondary School*
- XIV—*What Are Current Trends in Providing Guidance Services in the Senior High School?*
- XV—*What Are Current Trends in the Construction of a New School Plant?*
- XVI—*What Administrative Techniques Contribute to Better Principal-Faculty Relationships?*
- XVII—*How Have Schools Met the Problem of Eliminating Study Halls?*
- XVIII—*What Are the Pros and Cons of Teacher Merit-Rating Plans?*
- XIX—*What Is a Defensible Activities Program for the Senior High School?*
- XX—*How Can the Student Council Best Co-operate with the Principal in Administering the School?*
- XXI—*What Are Current Developments in College Admissions Policies?*
- XXII—*How Have Summer Schools Been Used To Enrich the Educational Program for the Academically Talented?*
- XXIII—*What Are Some Promising Administrative Practices in the Secondary School?*

4:30 P.M.—BUSINESS MEETING FOR MEMBERS OF THE ASSOCIATION

8:30 P.M.—GENERAL SESSION

SPECIAL PROGRAM TO BE PRESENTED BY THE PHILADELPHIA PUBLIC SCHOOLS

### **Wednesday, February 11**

9:30 A.M.—DISCUSSION GROUPS

- I—*What Are Current Developments in the Supervisory Responsibility of the Principal in the Junior High School?*
- II—*What Are Good Practices in Handling Student Discipline?*
- III—*What Is the Case For and Against Machine Techniques for School Scheduling?*
- IV—*What Are Current Trends in Junior High-School Organization and Administration?*
- V—*How Can the Senior High School Best Provide for the Academically Talented Student?*
- VI—*What Are Desirable Practices for Prevention and Control of Juvenile Delinquency at the Junior High-School Level?*
- VII—*How Can We Obtain Adequate Salaries for Principals?*
- VIII—*What Is a Desirable Testing Program To Meet Current Needs of Students?*

IX—*What Is the Role of the Wife of the Principal in the School Community?*

X—*How Can the Principal Best Promote His Professional Growth and That of His Staff?*

XI—*What Are New Developments in the Evaluation of Secondary Schools?*

XII—*What Can We Expect from Our High-School Parent-Teacher Associations?*

XIII—A CURRENT CRITICAL ISSUE IN SECONDARY EDUCATION—*Modern Foreign Languages in the Comprehensive Secondary School*

XIV—*What Responsibility Does the School Have for Seeking Scholarship Aid for Needy and Able Students?*

XV—*How Can State and National Membership Be Maintained and Increased?*

1:00 P.M.—GENERAL SESSION

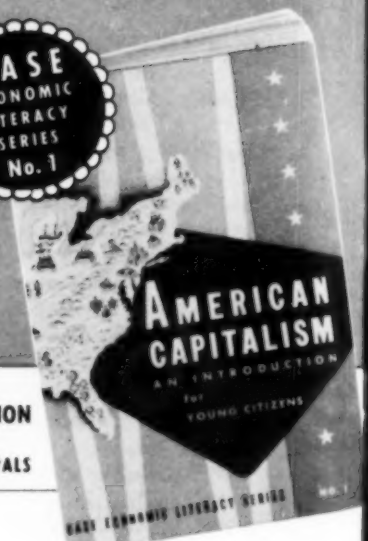
*How Adequate Is Our American Secondary School?*—George F. Bereday, Associate Professor of Comparative Education, Columbia University, New York, N. Y.

**NOTE:**

**The numerical order of the Discussion Groups is subject to change.**

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# Exploring Improved Teaching Patterns

## Second Report on Staff Utilization Studies

*Prepared for*

The Commission on the Experimental Study  
of the Utilization of the Staff  
in the Secondary School

*Appointed by*

The National Association of Secondary-School Principals,  
a Department of the National Education Association

*Supported by*

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# The Bulletin

## OF THE NATIONAL ASSOCIATION OF Secondary-School Principals

*This Association does not necessarily endorse any individual, group, or organization or the opinions, ideas, proposals, or judgments expressed at the annual convention of the Association, and/or published in THE BULLETIN.*

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*Issued Monthly, September to May Inclusive*

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## The Purposes of the January 1959 Bulletin

J. LLOYD TRUMP

READERS will recall that the January 1958 issue of THE BULLETIN, a publication of the National Association of Secondary-School Principals, entitled "New Horizons in Staff Utilization," was devoted basically to reports of experimental studies sponsored by the Commission during the first year of its existence, 1956-57. Also included in that volume were significant statements by P. E. Elicker, C. W. Sanford, L. W. Nelson, D. L. Cleland, R. G. Wilson, M. T. Gaffney, and J. G. Umstatt regarding the interest of the NASSP, Fund for the Advancement of Education, state departments and accrediting agencies, higher education institutions, and secondary education specialists in experimental studies of staff utilization. Reviewing this publication of one year ago would be a desirable background and introduction to the present volume.

Considerable progress has been made in the work of the Commission since the publication of the volume one year ago. Approximately one hundred junior and senior high schools widely scattered in various parts of the United States have been or are now involved, in one way or another, in experimental studies of staff utilization sponsored by the Commission. In addition to studies under Commission supervision, a large number of other staff utilization studies are being sponsored by a number of other agencies. Communication regarding these studies has been widespread within the profession. More than 45,000 copies of the Commission brochure, *New Horizons for Secondary School Teachers*, have been distributed, largely on request, in every state of the Union and in a number of foreign countries. Many articles have been written and speeches made by members of the Commission and the director in all parts of the country in efforts to inform principals, teachers, and others regarding the potential and results of the staff utilization studies.

This January 1959 issue of THE BULLETIN describes what has happened in the staff utilization studies during the year 1957-58. All of the articles were written prior to September 15, 1958. The first part of this volume presents the final report of two of the projects, Alexander Ramsey High School, Roseville, Minnesota, and Westside Community Junior and Senior High Schools, Omaha, Nebraska. The next section of the report is in the nature of a follow-up of two projects, Evanston Township High

---

J. Lloyd Trump is Director of the NASSP Commission on the Experimental Study of the Utilization of the Staff in the Secondary School, and Professor of Education, University of Illinois, 200 Gregory Hall, Urbana, Illinois.

School, Evanston, Illinois, and Ridgewood High School, Ridgewood, West Virginia, which were completed and reported in *THE BULLETIN* one year ago. There follow in the next section reports of projects which continued during 1957-58 and which will be continued during 1958-59. Finally, brief descriptions are provided of a number of new projects being started in 1958-59.

The writer, as general editor of this volume, faced a number of dilemmas in presenting the reports from the various schools. Many of them presented detailed analyses of research designs and statistical treatments that have been eliminated from the material as presented in this publication. Some readers will wish that even more such materials had been eliminated, while others may wish that some of these data had been included. Some readers will feel that the descriptions are too detailed, while others will wish that more information had been given. For those who find the material too voluminous, scanning the various chapters and paying special attention to the conclusions found at the end of nearly all of them will suffice. For those who wish more details, writing the author(s) of the chapter and asking for the information desired is suggested.

Although a fundamental purpose of this issue of *THE BULLETIN* is reporting to the profession what has been accomplished thus far in the experimental studies sponsored by the Commission, an even more basic objective is to present material that may stimulate the creative talents of teachers, supervisors, and administrators of secondary schools so that additional experimental studies may be undertaken. Only through such widespread experimentation, most of which cannot be sponsored by the Commission, will the quality of secondary education in the United States be further improved and positive steps taken to improve staff utilization.

## What Are We Trying To Accomplish in the Staff Utilization Studies?

LLOYD S. MICHAEL

DETAILS regarding the appointment of the Commission on the Experimental Study of the Utilization of the Staff in the Secondary School were provided by Dr. Charles W. Sanford, Dean of Admissions and Records, University of Illinois, and the First Chairman of the Commission, in the January 1958 issue of the NASSP BULLETIN. The present statement aims to outline all the purposes that the Commission has evolved since its appointment in May of 1956.

### GENESIS OF THE COMMISSION

The Commission had its genesis in problems associated with the shortage of well-qualified teachers for the secondary schools of the United States. There was much concern that school systems in their efforts to cope with problems relating to teacher shortage might engage in a number of practices which would in reality lower the quality of education in secondary schools. Such practices as increasing standardized classes, eliminating courses and services, lowering standards, employing teachers with lower qualifications to be in charge of the totality of instruction, reducing training that teachers should receive and increasing the number of hours that teachers might work were already being observed as methods being followed in adapting to the emergency. Members of the Commission believed that, in contrast to such adaptations, it would be better to see if experimentation would reveal ways of meeting the teacher shortage and at the same time improve the quality of education through better utilization of the time and energies of staff and students, changes in curriculum design and teaching methods, and reorganization of administrative patterns.

The Commission was also interested in at least three approaches to the problem of recruiting and retaining better qualified persons in the teaching profession. Efforts would be made to see if it were possible to demonstrate ways in which salaries and working conditions of professional staff members can be substantially raised, to see whether scholarships

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might be used to recruit able young persons from top-quality high-school graduates not going to college, and show how the pre-service and in-service training of teachers might be improved. Studies along all three of these lines have been undertaken.

Thus from the beginning, the Commission has been interested basically in improving the quality of education through creative and constructive approaches to solving the teacher shortage problem. The belief existed that approaches in addition to the usual ones being followed in many school systems were needed if these ends were to be accomplished.

#### STAFFING THE SCHOOLS

Many interesting and challenging innovations in the staffing of the schools are being studied and introduced into practice. The Commission hopes to discover, through experimentation done in local schools, what phases of what teachers now do need to be done by well-trained professional persons and what tasks can be done as effectively or more effectively by sub-professional persons with lesser or different kinds of training. Because of presently accepted definitions of teaching loads, it is difficult for teachers to find time and energy to do those things which are characteristic of professional workers. Teachers need to be in physical confrontation with students fewer hours per week so that they have more time for such activities as planning the totality of instruction, preparing imaginative instructional material, conferring and working with individual students, keeping up to date in professional matters, and devising better schemes for evaluating the results of instruction.

A real need exists to get former teachers back into teaching. Teachers need to be relieved of time-consuming, non-professional chores. Steps must be taken to raise the morale of teachers so that fewer will leave the profession. More attention also needs to be given individual differences among teachers. Some staff members have interest and ability to do certain things very well, but are less effective in others. Plans for staffing schools should recognize these individual differences among teachers so that most effective use may be made of teacher competences.

#### USING ELECTRONICS AND OTHER MATERIAL AIDS

Taking advantage of newer material aids to instruction, the Commission hopes to discover how these aids may at times be used to replace partially some teacher time and energy, and at other times supplement the efforts of teachers, but always to enrich the quality of instruction. The Commission has sponsored experimentation involving the use of closed-circuit television, overhead projectors using specially prepared transparencies, F-M radio, teaching films, locally prepared teaching tapes, locally prepared slides, and recording devices.

Sound approaches need to be taken to overcome barriers which have prevented wider use of these material aids in the classroom. Teachers need to develop confidence, understanding, and creativity with respect



Machine operator at Westside Junior and Senior High Schools, Omaha, Nebraska, starts program from tape library, monitors tape, and fills out his own spelling work sheet. Three rooms are receiving this program.

to these media. Students and parents also must learn confidence in these newer avenues to learning. Financial problems must be overcome.

The Commission does not imply lack of confidence in the printed page or the personally spoken word as methods of instruction. The belief exists that, in addition to these traditional methods of learning, students should have available as many of the newer media as possible. Students learn many things outside of school through the use of material aids; the school should keep pace with out-of-school teaching techniques.

#### DEVELOPING STUDENT RESPONSIBILITIES FOR LEARNING

Preparing students more effectively for college and work requires further emphasis in secondary schools on the development of independent responsibility and capacity for learning on the part of students. It is possible that the time and activities of students in secondary schools have been too highly structured through scheduling and other regulatory measures. The Commission hopes to learn through experimentation how much time students should spend in classes and how much time may profitably be spent by them working independently in libraries, laboratories, resource and materials centers, and in learning experiences outside the school plant.

The time which students spend in class as well as methods of instruction should be related more closely to the purposes of content of teaching. An example of this purpose might be in the teaching of foreign language where it is conceivable that students should spend even more time working independently in a language laboratory than they do in formalized class instruction; the schedule of such students might include more than two hours per week in class with the balance of their time in language laboratories and out of school experiences.

#### CURRICULUM REORGANIZATION

The Commission recognizes the inter-relationship of all aspects of secondary education. When there are re-deployments of teachers, students, materials of instruction, and schedules, there are bound to be effects upon curriculum structure and content. The Commission is interested in discovering what curriculum content may be taught in larger than usual groups, smaller than usual groups, and through independent learning by students. Also there is interest in discovering more effective ways of teaching general education aspects of subject matter to all students at different grade levels.

A related problem concerns the preparation of curriculum material. The possibility exists that much frustration, loss of time and energy, and adverse effects upon morale results when all teachers are required to develop curriculum materials. On the other hand, teachers who are competent and interested in development of curriculum materials may not have time to do so because they must follow standard practices with respect to teaching loads.



### RE-EXAMINATION OF ACCREDITING STANDARDS

The Commission recognizes many contributions which state departments of education and regional accrediting agencies have made to improvements in the quality of education. These agencies have been an effective substitute for national systems of education found in many other countries. At times, however, principals, teachers, and others may use the regulations of these agencies as excuses for not engaging in novel and experimental approaches to the improvement of secondary education. The Commission wants to perform a valuable service to regulatory agencies by sponsoring studies and reporting results that can be evaluated by reasonable persons in these agencies. The experience of the Commission has been that individuals in these agencies are willing to waive certain regulations during an experimental period so that various requirements can be re-examined from time to time.

Current standards represent the best thinking that we have been able to do up to the present time. This does not mean that such standards cannot be improved or that they should not be subjected to research from time to time.

### EMPHASIS ON RESEARCH

The Commission intends to encourage widespread research so that schools all over the nation might re-examine practices in a systematic manner. Such experimentation needs to be conducted in small as well as large schools in all parts of the United States. While much of such research would be conducted on an individual school or school-system basis, there would appear to be certain advantages also in having state-wide programs of cooperative staff utilization studies. The Commission is sponsoring such programs in Utah and Illinois.

The Commission has insisted in all of its studies that universities and colleges be associated with the studies not only for the consulted help they can give, but also that they might more readily observe implications for teacher education in the studies. The advantages of closer working relationships and understanding between secondary education and higher education institutions have been recognized.

No single type of research designed has been advocated or insisted upon by the Commission. Some studies might be classified more as demonstrations than experimentation in the purist sense, although other studies have held to the more classical research pattern. Evaluation has resulted from both statistical and verbal inferences. What knowledgeable professional people believe to be right may be as important in evaluating the results of an experiment as the statistical measures of differences resulting; both forms of evaluation are being used.

The Commission believes that significant improvement in teacher morale and effectiveness may result from experimentation in local schools. One of the ways of improving the quality of education is the development of an experimental attitude on the part of all those as-

sociated with it. While there is no disparagement of research done in higher institutions or in laboratory schools, the Commission believes research also needs to be done at the action level in local schools all over the United States.

The Commission also sees as one of its responsibilities the dissemination of research done by others. Many other agencies and organizations are engaged in sponsoring studies designed to improve the quality of secondary education. Such efforts need to be called to the attention of secondary-school workers, and the Commission proposes to aid in such dissemination.

#### CONCLUSION

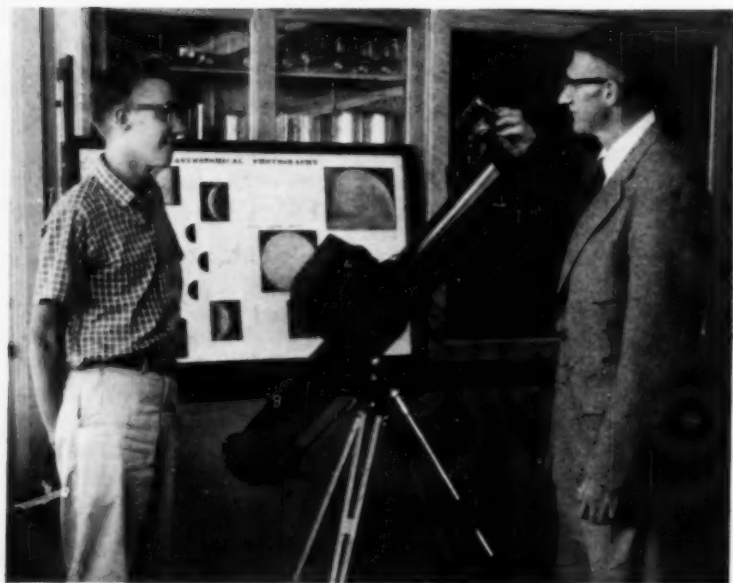
The Commission aims basically at further improvements in the quality of secondary education in the United States. Not implied is lack of faith in the present excellence of these schools. There is belief that continuous search is needed to see if present practices are the best that they can be.

Like the writers of the 1958 Rockefeller Report on Education entitled, "The Pursuit of Excellence," the Commission does not believe that the use of sub-professional persons, electronic and other material aids to instruction, and re-deployments of students and content of instruction are stop-gap measures to be treated as temporary phenomena. Through experimentation the full potential of these developments may be realized so that the ongoing efforts to improve the quality of secondary education may be more productive. Through financial and psychological support of such experimentation, the Commission seeks to make its contribution.

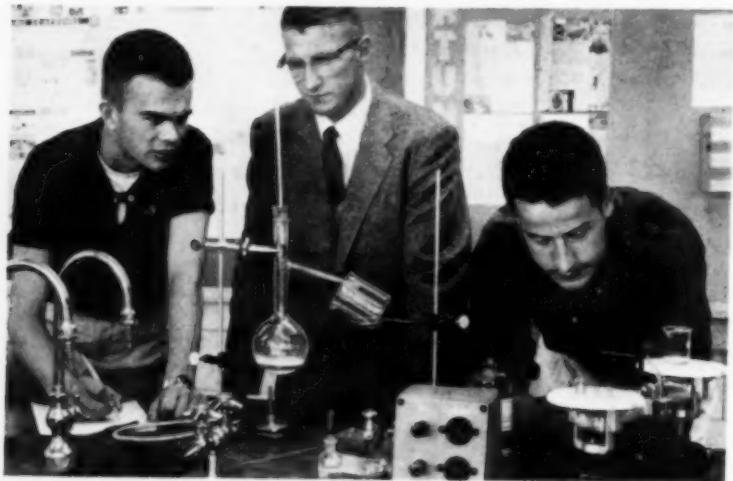
The Commission expects to complete its sponsorship of experimentation by September 1960. It does not believe that all of its purposes will have been accomplished by that time, but hopes that sufficient momentum may be created so that others will carry on comparable activities aimed to achieve the purposes described in this chapter.

***Part II***

**Studies Completed at  
End of 1957- 58 School Year**



Advanced science student from nearby university assists Alexander Ramsey High School student on special project.



Local industrial scientist aids Alexander Ramsey High School chemistry students on Saturday morning.

**Non-Certificated Laboratory Assistants Are Used To  
Extend Science Opportunities for Pupils at the  
Alexander Ramsey High School, Roseville,  
Minnesota, Second Year**

CURTIS JOHNSON  
KARL VANDERHORCK

IN THE January 1958 issue of THE BULLETIN, the Alexander Ramsey High School reported on the first year of its two-year project in using non-certificated or "outside" assistants in extending science laboratory opportunities to pupils of the school district. As the previous report indicated, this project appeared as an outgrowth of the concern of the school staff and the members of the Commission in solving the perennial suburban problem of exploding enrollments and fewer science facilities per pupil. The following pages describe and evaluate the project as it was conducted during this past school year. Necessarily, much of the report describes the project and the groups of pupils participating in the project. Evaluation of the project relies heavily on judgment. If the reader can bear with the subjective nature of much of the appraisal of our successes and failures, it is felt that the report can serve as a guide to other schools which may be interested in expanding their services in the science area.

**THE PROJECT PLANNED TO ANSWER FOUR QUESTIONS**

To refresh the reader's memory, and before entering a description of the project, it may be well to reiterate the objectives of the project at Alexander Ramsey. Basically, it was determined that the project would study and attempt to determine the following four things:

1. What benefits may be derived from additional laboratory experiences under the supervision of non-certificated project assistants?
2. How can maximum use be made of the science facilities available?
3. Who will benefit most from the extended experiences—the gifted student, the average student, or the less than average student?
4. Is it possible to have larger classes and to supplement these classes through extra time provided in the laboratory for working on projects related to the classroom work and still have a desirable learning situation?

Curtis Johnson is Principal and Karl VanderHorck is Project Evaluator at the Alexander Ramsey High School, Roseville, Minnesota.

This report is a summary of the effort of the Alexander Ramsey High School staff to answer the above questions.

#### EXPECTATIONS FOR SCIENCE ENRICHMENT WERE HIGH

It is probably unwise to enter an educational study of any type with expectations. However, the study under the auspices of the Commission was undoubtedly looked upon by the staff of the school as an unparalleled opportunity to realize improvements in the instructional program in science. The decision had been made in staff meetings to make available the laboratory facilities in an effort to enrich education. The support of the Fund for the Advancement of Education through the Commission provided funds for personnel and equipment for this venture. The hope throughout has been that the science learning for particularly interested pupils would be enriched and that more pupils would have their interests stimulated. It was further anticipated that a study of this type, if its objectives were met in whole or in part, would provide the evidence and experience needed to initiate a future course of action for Alexander Ramsey and to encourage other schools to attempt successful procedures.

In keeping with the expectations and objectives, the staff felt, the study could be considered a success if the results would permit the staff to answer that:

1. there are specific benefits from the additional laboratory experiences under the supervision of project assistants;
2. the method used *did* make maximum use of the science facilities available;
3. the gifted, the average, and the less than average pupil *all benefited*; and
4. it is possible to supplement large classes through extra time provided in the laboratory for working on projects related to the classroom work.

The following pages of this report, besides describing what was done, indicate the extent to which the objectives were met and the expectations realized.

#### STUDY RELIED ON ACHIEVEMENT TESTING AND JUDGMENT

Undertaking to establish a means of evaluating the project in face of certain experimental inadequacies posed a number of problems. It was agreed that some empirical evidence was necessary in addition to judgment and opinion.

Several severe difficulties are encountered from the standpoint of conducting a statistically rigorous analysis of what was done in this project. It needs to be strongly emphasized that basic conditions which must be met, if statistically valid conclusions are to be drawn, were not met in the organization and design of the project and its subsequent study. A statistically proper situation is not implied nor was one intended. With the lack of time and shortage of experience incumbent upon all staff members in this particular type of study, it was felt that a true experiment could not be conducted. And since the entire program was pupil

oriented, it was not deemed advisable to deny a pupil an opportunity to participate in the project activities because he was not in the random selection. Thus, it is seen, the condition of randomness, essential to real experimental design, is absent and inference in the strict sense is not possible. This should not mean, however, that no judgment is possible and that nothing is to be learned from the study. On the contrary, the staff at Alexander Ramsey High School felt that a substantial amount could be learned and that inference could be made on the basis of subjective observation also. At least, the staff feels, the interests of the pupils have been served and that each year this sort of activity is in operation a better and more valid study in the succeeding year is made possible.

After much discussion and consultation four means of making the study and evaluating the project developed:

1. *Criteria testing—retesting*—in which differences between the participating groups and non-participating groups in science would be considered at least indicative of a tendency.

2. *Success in extra-school activities*—in which a relationship might be established between participation in the project and outside activities such as the Science Fair or Junior Academy of Science.

3. *Observation*—in which the project evaluator with no personal classroom or activity relationship with participating pupils would provide a broad, subjective evaluation on the basis of criteria of attitude, interest, accomplishment, etc.

4. *Opinions of project assistants and teachers involved in the study*—in which staff opinions would be expressed and recorded to provide the evaluation of those closest to the project.

While there may be ample room for quarreling over the validity of these means of evaluation, under the circumstances these seemed to be the best tools available. Most schoolmen will give some deference to the opinions of other schoolmen in untried areas, on the basis that an educated opinion is not necessarily valueless.

#### THE PROGRAM OPERATED IN FOUR ACTIVITY PERIODS

The second year's program was essentially the same as that of the first year as described in the January 1958 BULLETIN. Basically the program was this. The activity periods, which are the fourth and fifth hours of a seven-period school day at Alexander Ramsey, after school two nights a week and Saturday morning were established as the times to be used for the project. Fifty-five minutes' time was provided in each of the activity periods, with an hour and a half being provided after school and two hours on Saturday mornings.

#### NON-CERTIFICATED LABORATORY ASSISTANTS HAD VARIED BACKGROUNDS

Under the project, laboratory assistants were to be provided for the activity periods, the after-school period, and the Saturday period. These

were non-certificated personnel and over and above the regular teaching staff. During the school year 1957-58, the laboratory assistants had diverse backgrounds. They included one college senior in science education, one undergraduate in bacteriology, one graduate student working on a Ph.D. in dairy products, and a quality control engineer, who had previous teaching experience, from Minnesota Mining and Manufacturing Company.

#### ENROLLMENT IN THE PROGRAM WAS ENTIRELY VOLUNTARY

Pupils were enrolled in the activity periods with guidance from the counseling staff. Those in the after-school group and the Saturday morning group appeared if interested and enrolled informally. Enrollment throughout was on a voluntary basis, although a pupil, once enrolled during the fourth- and fifth-hour activity periods, was bound to attend until formally released and shifted to another activity. The after-school and Saturday groups were not similarly bound.

No selection factor other than pupil interest in the science activity was considered. The fourth-period activity was exclusively for grade-nine pupils. The fifth period and the after-school period was exclusively for senior high-school pupils. The Saturday group included pupils in grade nine as well as in senior high school.

#### ACTIVITIES CONTEMPLATED INCLUDED INDIVIDUAL AND GROUP PROJECTS, LECTURES, AND FIELD TRIPS

After extensive staff discussion, it was decided that the ninth-grade program for 1957-58 would need to be somewhat structured in its early stages. It was felt that the ninth-grade pupils, many of whom had no previous science instruction, were not sufficiently acquainted with science to begin working on independent projects. The project laboratory assistants in cooperation with the general science classroom teacher endeavored to set up areas in which pupils could do group experiments and individual demonstrations. Later in the year, the ninth-grade pupils were to select individual or small group projects on which to work—all under the supervision of the assistants. These projects were to pursue the pupil's interest. Fairly high standards of performance were expected, both in the initial reading-research stages and in the execution.

The plan for the senior high school was basically, from the beginning, the project approach. Projects were required in most of the senior high science classes. Past history indicated that many projects of a highly original and well-executed nature were possible with the senior high group. No restrictions were to be placed on the type and extent of the individual project, except those limits required by safety or triteness. In addition to the work of the pupils, field trips and lectures in specialized areas were planned.



ATTENDANCE TENDED TO FALL OFF RAPIDLY FOR ALL  
BUT THE VERY INTERESTED

With the time for activities set up, the method of enrollment determined, and a general plan of activities laid out, the next question is logically that of attendance. How many pupils took advantage of the opportunity to use the laboratories with supervision? Answering this question offers some difficulty, not because of attendance records, but because of the greatly varying amounts of time individual pupils may have spent in the activity through the year.

The basic philosophy of the activity program at Alexander Ramsey High School is to provide a pupil with maximum opportunity for diverse experiences. Thus, it is possible for a pupil to be enrolled in several activities throughout the week. It is possible, for example, for a pupil to be enrolled in the science activity on one, two, three, four, or five days each week, depending upon which other activities interest the pupil. Further, for activity purposes, the school year is divided into three parts, corresponding to the three major interscholastic sports seasons. This means that a pupil interested in playing basketball may have been in the project two days a week during the fall, and three days a week during the spring, but not enrolled during the winter. It can be seen that any pattern of attendance is difficult to obtain except for a single student. A similar hazard is encountered in the after-school and Saturday group due to the almost completely voluntary nature of attendance. In order to arrive at some notion of the number of pupils served through the school year 1957-58, a tabulation has been made of the attendance for the fourth period, fifth period, and the Saturday period. No distribution is provided for the after-school group. Attendance problems and absence of data make any reasonable distribution impossible. Suffice to say that after-school attendance was dismal, except for a few pupils who also availed themselves of fifth-period and Saturday opportunities. The data for the other periods are shown in Tables 1, 2, and 3.

An examination of Table 1 shows that the range of periods of participation for those in the fourth-period activity was from five periods to 132 periods for the year. The median number of periods of attendance was 26. That is equivalent to about five school weeks. The actual maximum possible participation for the entire year was 138 periods. Nearly a quarter of the pupils showed less than a total of 12 periods of participation, while one fifth showed more than 44 periods of participation. Table 2 shows that the number of periods of participation for those in the fifth-period activity ranged from five periods to 138. Again the actual maximum number of periods a pupil could participate was 138. About one quarter of the group participated fewer than 12 periods, while one quarter participated 63 or more periods. The median number of periods attended was 29 for the fifth-period group. Six more pupils participated than the number shown in the table, but attendance data for these were unavailable. It would be reasonable, however, to assume that the attendance of these pupils was low.

TABLE 1. Distribution of Periods of Participation by Number of Pupils in the Fourth-Period Science Activity, Alexander Ramsey 1957-58

<i>Periods of Participation</i>	<i>No. of Pupils</i>	<i>Cumulative Number</i>	<i>Periods of Participation</i>	<i>No. of Pupils</i>	<i>Cumulative Number</i>
132	1	134	39	1	92
100	1	133	38	1	91
99	1	132	36	1	90
96	1	131	33	3	89
88	1	130	32	1	86
81	1	129	31	8	85
64	2	128	30	4	77
63	1	126	28	2	73
59	2	125	27	4	71
58	3	123	26	2	67
57	2	120	25	1	65
56	1	118	23	2	64
55	1	117	22	5	62
54	1	116	21	1	57
51	1	115	18	1	56
48	1	114	17	1	55
47	2	113	16	7	54
46	4	111	15	7	47
44	3	107	12	12	40
43	5	104	11	25	28
42	7	99	10	1	3
			5	2	2

The attendance information for the Saturday group is given in Table 3. Here the maximum number of hours a pupil could participate was 58 hours. Since each Saturday period lasted two hours, the scale of hours is in multiples of two. Table 3 shows a range of hours of participation from 2 to 52 for the year. Again the largest number of pupils participated the fewest number of hours. A quarter of the pupils attended only one Saturday, over one half attended 3 or fewer Saturdays, and over three fourths of those participating came five or fewer Saturdays. A hard core of pupils participated on most available days. Conclusions from the attendance are difficult to avoid. The data itself speaks with some eloquence. An interesting fact appeared in the Saturday attendance, which perhaps shows that there are numbers of pupils in schools outside the Roseville district that are interested in additional science work. Seventeen pupils not enrolled at Alexander Ramsey participated in the program. Of this number, nine are graduates of the school; two of these were

TABLE 2. Distribution of Periods of Participation by Number of Pupils in the Fifth-Period Science Activity, Alexander Ramsey 1957-58

<i>Periods of Participation</i>	<i>No. of Pupils</i>	<i>Cumulative Number</i>	<i>Periods of Participation</i>	<i>No. of Pupils</i>	<i>Cumulative Number</i>
138	3	54	56	1	37
115	1	51	55	2	36
114	1	50	44	4	34
110	1	49	42	1	30
88	1	48	30	2	29
87	1	47	29	4	27
83	1	46	28	2	23
77	1	45	27	1	21
74	1	44	22	1	20
64	1	43	15	2	19
63	2	42	14	1	17
58	1	40	12	3	16
57	2	39	10	4	13
			5	9	9

enrolled at the University of Minnesota. Three more of the 17 lived in the city of St. Paul and two lived in other localities, two more came from the junior high school in the district, and one came from a parochial grade school. In addition one junior high-school teacher made use of the laboratories on Saturday. None of these "extras" are included in Table 3.

#### ABILITY AND ACHIEVEMENT CHARACTERISTICS OF THE PARTICIPATING GROUPS

This section of the report will present some quantitative information for the purpose of ascribing certain characteristics of ability and achievement to the Participating Groups of pupils enrolled during the 1957-58 school year. The measure of "ability" used is the *American Council on Education Psychological Examination for High-School Students*,<sup>1</sup> given in ninth grade and using Minnesota High-School norms expressed in percentile ranks. Since the test was administered in grade nine, it is not possible to record scores for all pupils in the Participating and the Non-participating or Control Group. It must be assumed the pattern for the group for which scores are available is sufficient.

<sup>1</sup> *American Council on Education Psychological Examination for High-School Students*, The American Council on Education, 744 Jackson Place, Washington 6, D. C., 1947.

TABLE 3. Distribution of Periods of Participation by  
Number of Pupils in the Saturday Science Activity,  
Alexander Ramsey 1957-58

<i>Periods of Participation</i>	<i>Number of Pupils</i>	<i>Cumulative Number</i>
52	1	120
48	1	119
40	1	118
36	1	117
30	1	116
28	1	115
26	2	114
24	3	112
20	3	109
16	6	106
14	3	100
12	2	97
10	14	95
8	16	81
6	17	65
4	15	48
2	33	33

Two batteries of standardized science achievement tests were administered, with equivalent forms of each test being given in fall and in spring. The following achievement tests were given to those pupils enrolled in the respective science courses:

- GENERAL SCIENCE: *Read General Science Test, Forms Am and Bm*<sup>2</sup>  
*Cooperative General Science Test, Forms X and Y*<sup>3</sup>
- BIOLOGY: *Nelson Biology Test, Forms Am and Bm*<sup>4</sup>  
*Cooperative Biology Test, Forms X and Y*<sup>5</sup>
- PHYSICS: *Dunning Physics Test, Forms Am and Bm*<sup>6</sup>  
*Cooperative Physics Test, Forms X and Y*<sup>7</sup>
- CHEMISTRY: *Anderson Chemistry Test, Forms Am and Bm*<sup>8</sup>  
*Cooperative Chemistry Test, Forms X and Y*<sup>9</sup>

<sup>2</sup> *Read General Science Test*, Evaluation and Adjustment Series, World Book Company, Yonkers-on-the-Hudson, New York.

<sup>3</sup> *Cooperative General Science Test*, Cooperative Test Division, Educational Testing Service, Princeton, New Jersey.

<sup>4</sup> *Nelson Biology Test*, Evaluation and Adjustment Series, World Book Company, Yonkers-on-the-Hudson, New York.

<sup>5</sup> *Cooperative Biology Test*, Cooperative Test Division, Educational Testing Service, Princeton, New Jersey.

<sup>6</sup> *Dunning Physics Test*, Evaluation and Adjustment Series, World Book Company, Yonkers-on-the-Hudson, New York.

<sup>7</sup> *Cooperative Physics Test*, Cooperative Test Division, Educational Testing Service, Princeton, New Jersey.

<sup>8</sup> *Anderson Chemistry Test*, Evaluation and Adjustment Series, World Book Company, Yonkers-on-the-Hudson, New York.

<sup>9</sup> *Cooperative Chemistry Test*, Cooperative Test Division, Educational Testing Service, Princeton, New Jersey.

Curiosity prompted the administration of the "Y" and the "Bm" forms of the test in the fall and the "X" and the "Am" forms in the spring. The previous year the *Cooperative General Science Test* and *Read General Science Test* and the *Anderson Chemistry Test* listed previously were given in the seemingly more logical order of "X" before "Y" and "Am" before "Bm." Analysis of the scores showed, that, while many over-all gains were apparent, many pupils seemed to do more poorly in the "year-end" test than in the "year-beginning" test. The question arose as to whether the two forms of the tests were actually equivalent or was one somewhat more difficult than the other. Probably with no real hope of arriving at an answer to this, due to the number of variables present, the order of administration was reversed. If the forms are equivalent, the order should make no difference.

Certain problems in the preparation of the data need to be pointed out. In trying to describe the fifth-period activity group, there are three grade levels enrolled in three different science courses which makes it necessary to break the one group into three sub-groups for purposes of analysis. The Saturday morning group offers a similar and somewhat enlarged problem, for there are four grade levels represented from four different courses in science, plus a number of enrollees outside the school. These latter will be ignored. The after-school group proved to be such an anaemic body that no purpose can rightly be served by any discussion of it.

Although the framework of the study was loose, it was deemed advisable to establish some sort of Control Group against the Participating Group. Experience has shown that the Participating Group from, say, a class in chemistry could not be compared with the entire group of pupils taking chemistry and of which they were a part. Severe attenuation has resulted from this procedure. Thus, the Control Group has been established as the pupils in a given science class exclusive of the Participating Pupils.

Finally, it seems prudent again to point out the rather obvious statistical weakness of the procedures undertaken throughout this study. No claims are made for the data to be presented, other than the directions they seem to indicate and the possible further investigation they seem to suggest. For this reason also, no sophisticated statistical tools have been employed. The quartile scores and median are sufficient as trend indicators and nothing more refined can be expected to improve the original data. This is not to foreshorten the usefulness in trend indication of the data as it stands.

#### FOURTH-PERIOD ACTIVITY GROUP COMPARED WITH "CONTROL" GROUP ON ABILITY AND ACHIEVEMENT

The fourth-period activity group, composed entirely of grade-nine pupils, will be described first.

### *Ability of Fourth Period Participating Group Seems Higher*

Using the A.C.E. *Psychological Examination for High-School Students*, Minnesota High-School Norms, as a measure of ability, the Control, or Non-participating, Group is compared with the Participating Group in Table 4. An examination of Table 4 shows that the percentile rank of pupils varies slightly between the Control Group and the Participating Group. It would appear on the bare face of it, that the Participating Group had more strength ability-wise in the upper percentile ranks than

TABLE 4. Distribution of Percentile Ranks on the *American Council on Education Psychological Examination for High-School Students*, Minnesota Norms, of the Alexander Ramsey "Control" Group Compared with the Participating Groups in the Fourth-Period Science Activity, 1957-58

Percentile Rank A.C.E.	Group				Percentile Rank A.C.E.	Group			
	"Control"		Participating			"Control"		Participating	
	No. of Pupils	Cumulative No.	No. of Pupils	Cumulative No.		No. of Pupils	Cumulative No.	No. of Pupils	Cumulative No.
99+	2	354	6	87	54	11	164	3	29
99	10	352	2	81	52	6	153	2	26
98	8	342	4	79	50	4	147	3	24
97	4	334	3	75	48	9	143	3	21
96	2	330	—	—	46	7	134	—	—
95	6	328	5	72	44	8	127	1	18
94	7	322	2	67	42	12	118	1	17
93	4	315	1	65	40	10	106	—	—
92	6	311	—	—	38	5	96	2	16
91	6	305	1	64	36	3	91	—	—
90	4	299	2	63	34	6	88	1	14
89	6	295	—	—	32	6	82	2	13
88	11	289	2	61	30	6	76	1	11
87	11	278	1	59	28	5	70	2	10
86	2	267	2	58	26	6	65	—	—
85	2	275	2	56	24	8	59	—	—
84	7	263	3	54	23	5	51	1	8
82	3	256	2	51	21	4	46	—	—
81	7	253	—	—	20	2	42	1	7
79	3	256	1	49	18	5	40	—	—
77	9	243	1	58	17	2	35	—	—
75	9	234	3	47	16	1	33	1	6
74	5	225	3	44	14	3	32	—	—
72	5	220	3	41	13	4	29	1	5
70	5	215	4	38	11	1	25	1	4
69	8	210	—	—	10	4	24	—	—
67	5	202	1	34	9	2	20	—	—
65	5	197	1	33	8	4	18	1	3
63	7	192	1	32	7	3	14	—	—
61	10	185	—	—	6	2	11	1	2
59	3	175	1	31	5	5	9	—	—
57	7	172	1	30	2	1	4	1	1
56	1	165	—	—	1	3	3	—	—

did the Control Group. It is a little surprising that both groups have a distribution which locates more pupils at the upper end of the distribution, percentile rank-wise, than at the middle.

#### *Achievement of Fourth-Period Participating Group Generally Higher*

The next question would logically be, "What is the comparison of achievement between the two groups?" The ninth-grade pupils were administered both the *Read General Science Test, Forms Am and Bm*, and the *Cooperative General Science Test, Forms X and Y*, respectively, in an effort to determine if one group seemed to achieve differently than the other. The *Bm* form and the *Y* form were used early in the fall of 1957, while the *Am* and *X* forms were used in late spring of 1958. Any conclusions drawn here are without the benefit of controlled experimentation, and need to remain descriptive in nature. The data produced by these tests for the Control Group (Non-participating) and the Participating Group are summarized by quartiles in Table 5. It was felt that a more simple, uncultured presentation of extensive data would be preferred to a more elaborate one. However, so that the test score information is available for those wishing to examine it, it has been included in the appendix.

The Participating Group seems to have held some advantage over the Control Group through the year, whatever reasons may be ascribed to the phenomenon. An examination of Table 5 shows that the Participating Group had quartile scores higher than the Control Group in every quartile, on both tests in both fall and spring. On the *Read General Science Test*, the Participating Group produced a first quartile score 5.07 points higher than the Control Group in fall, but only 3.33 points higher in spring. The median, or second quartile, score of the Participating Group on the same test was 4.40 points higher in fall and 5.61 points higher in spring. The third quartile score for the participants was 7.80 points higher in fall, but dropped to 3.13 points in spring. A consideration of the quartile scores on the *Cooperative General Science Test* shows an increase for the participants of from 2.74 to 3.41 points higher on the first quartile score from fall to spring, and an increase of from 5.75 points to 7.00 points higher on the second quartile score for the same period. However, some ground was lost in the third quartile score, for the Participating Group had a 10.45 point advantage in fall which dropped to a 7.61 margin in spring.

At least it seems that the Participating Group, while not providing any astonishing display of achievement gain, did continue to achieve. One would expect this since this group apparently had the advantage ability-wise. It would be impossible to attach any over-riding significance to the data either for or against the project. It seems important to point out that the program for the ninth grade did attract a fair proportion of the better pupils.

TABLE 5. Quartile Scores on the *Read General Science Test, Forms Bm and Am*, and the *Cooperative General Science Test, Forms Y and X*, of the "Control" Group Compared with the Participating Group in the Fourth-Period Science Activity, 1957-58

Name of Test	Read Gen'l. Science		Cooperative Gen'l. Science	
	Form Bm (fall)	Form Am (spring)	Form Y (fall)	Form X (spring)
<i>Range of Scores:</i>				
Control	5-66	11-69	0-63	2-75
Participating	8-70	18-70	7-71	7-76
Q <sub>1</sub> Control	31.93	37.30	16.93	22.14
Participating	37.00	40.63	19.67	25.55
Q <sub>2</sub> (Median) Control	38.60	44.55	24.00	32.00
Participating	43.00	50.16	29.75	39.00
Q <sub>3</sub> Control	45.90	53.50	31.92	41.33
Participating	53.70	56.63	42.37	48.94
Number of Pupils Control	360	352	359	347
Participating	96	94	94	93

\* All scores are raw scores. Quartile scores are computed on the assumption that the cases are evenly distributed through an assumed interval which reaches .5 points below and above a given raw score; hence, the figures are not integers as are the actual scores.

#### FIFTH-PERIOD ACTIVITY GROUP COMPARED WITH "CONTROL" GROUP ON ABILITY AND ACHIEVEMENT

The fifth-period activity group (as well as the Saturday group, as will be seen) offers several difficulties in reporting not found in the fourth-period group. The fifth-period group was composed of senior high-school pupils from three different classes. For this reason it will be necessary to reduce the achievement test data to fragments in order to compare the participants with their classmates. This inevitably leads to some repetitious discussion, but if the group is to be described at all—and this is the only quantitative data available—it must be broken into fragments. Happily this situation does not pertain for a reporting of the ability of the groups on the basis of the percentile rank on the A.E.C. *Psychological* on Minnesota High-School Norms.

#### *Ability of Fifth-Period Participating Group Seems Higher*

As in the case with the fourth-period science activity group, the fifth-period group seemed to have a proportionately larger share of pupils of "better-than-average" ability than did the Control, or Non-participating,



Group. Table 6 shows that over one half of the Participating Group had percentile ranks of over 75 on the *A.C.E. Psychological*, while the Non-participating Group had about one half of its number above the 65 percentile rank. Only four of the participants out of a total of 43 pupils were below a percentile rank of 36, while 102 pupils out of a total of 415 non-participants were below a percentile rank of 36. This would seem to offer evidence that the Participating Group enrolled, more often than not, pupils of above average ability.

TABLE 6. Distribution of Percentile Ranks on the *American Council on Education Psychological Examination for High-School Students*, Minnesota Norms, of the Alexander Ramsey "Control" Group Compared with the Participating Group in the Fifth-Period Science Activity, 1957-58

Percentile Rank A.C.E.	Group				Percentile Rank A.C.E.	Group			
	"Control"		Participating			"Control"		Participating	
	No. of Pupils	Cumulative No.	No. of Pupils	Cumulative No.		No. of Pupils	Cumulative No.	No. of Pupils	Cumulative No.
99+	13	415	3	43	54	9	170	2	8
99	5	402	2	40	52	11	161	—	—
98	11	397	3	38	50	6	150	—	—
97	4	386	1	35	48	5	144	1	6
96	6	382	1	34	46	7	139	1	5
95	7	376	2	33	44	5	132	—	—
94	10	369	2	31	42	7	127	—	—
93	5	359	1	29	40	10	120	—	—
92	6	354	2	28	39	1	110	—	—
91	4	348	—	—	38	10	109	—	—
90	5	344	2	26	36	6	99	1	4
89	7	339	1	24	34	8	93	—	—
88	7	332	1	23	32	13	85	—	—
87	11	325	—	—	30	3	72	1	3
86	3	314	—	—	26	6	69	—	—
85	6	311	1	22	24	9	63	—	—
84	4	305	1	21	23	2	54	—	—
82	3	301	—	—	21	6	52	—	—
81	11	298	—	—	20	10	46	—	—
79	6	287	—	—	18	1	36	1	2
77	8	281	1	20	17	5	35	—	—
75	12	273	—	—	16	2	30	—	—
74	8	261	1	19	14	3	28	—	—
72	13	253	1	18	13	2	25	—	—
70	12	240	1	17	11	3	23	1	1
69	12	228	1	16	10	4	20	—	—
67	9	216	1	15	9	2	16	—	—
65	10	207	2	14	8	6	14	—	—
63	10	197	1	12	7	3	8	—	—
61	5	187	—	—	5	3	5	—	—
59	6	182	1	11	4	2	2	—	—
57	6	176	2	10					



In the second phase of the chemistry course, students work on problems of solubility.



A "team" of biology students returning from a field trip learn to use a key to identify specimens collected on the trip. In subsequent class sessions, the record of their individual observations and collections will become part of the class record.

### *Achievement of Fifth-Period Participating Group Generally Higher*

In order to compare the achievement of the Control Group with the Participating Group in the fifth-period science activity, it is necessary to discuss six sets of tests at three different grade levels. As briefly as possible, certain observations will be made on the data. Far more eloquent description is found in the data itself. Table 7 summarizes the data from the tests given to both Participating and Non-participating Groups from the biology, physics, and chemistry classes.

Referring to Table 7, the biology tests will be considered first. On the fall test, *Form Bm*, of the *Nelson Biology Test*—given to all pupils in biology classes—the Participating Group showed a median score of 32.50 compared with a score of 28.00 for the "Control" Group. The median scores in spring on the same test show a gain of 45.50 points for the Participating Pupils compared to 35.75 points for the "control"; a difference of 4.50 points in the fall and 9.75 points in spring. The first and third quartile scores show the participating group maintained approximately the same advantage from fall to spring. The quartile scores on the *Cooperative Biology Test* reported in Table 7 reveal some curious results. While the Participating Group displays higher scores than the Control Group in all quartiles in both fall and spring scores, the scores for both groups were lower in spring than in fall. It will be noted that the Participating Group shows a median score of 36.50 in fall testing and only 27.00 in spring testing. At the same time the Control Group shows a fall median of 22.07 and a spring median of 16.90. This same "reverse twist" is found to be true on all other quartile scores for both groups on the *Cooperative Biology Test*. Some explanation is surely needed. A thorough examination of all items on the *Cooperative Biology Test* revealed a rather high percentage of items directly related to botany. In conference with the two biology teachers and through a study of their lesson plans, it was discovered that one teacher covered the material in botany very early in the school year, before fall testing, while the other teacher had not yet introduced botany at the time the spring tests were administered. Thus, it would seem, those pupils who had "plants" in fall tended to do better on the test in fall. However, by spring the same pupils had forgotten most of what they knew about plants, and, therefore, did more poorly in this heavily emphasized area. The pupils with no instruction in botany neither gained nor lost in this exchange, but the effect on the curve of the former group is apparent. This would seem to be a caution in taking test data at face value.

On the *Dunning Physics Test*, administered to the physics and electronics classes, the Participating Group shows a median score of 36.50 in fall compared with a score of 26.36 for the Control Group. In spring testing, the Control Group closed the gap somewhat, with the Participants median at 34.50 (less than fall) and the Control median at a score of 27.50. The other quartile fall-spring scores show the Participating Group out in front. A particularly large gain by the Par-

TABLE 7. Quartile Scores on Equivalent Forms of Biology, Physics, and Chemistry of the Alexander Ramsey "Control" Group Compared with the Participating Groups in the Fifth-Period Science Activity, 1957-58

Name of Test	Range of Scores		First Quartile $Q_1$		Median $Q_2$		Third Quartile $Q_3$		Number of Pupils	
	"Control"	Participating	"Control"	Participating	"Control"	Participating	"Control"	Participating	"Control"	Participating
<i>Nelson Biology Test</i> Form Bm (fall)	9-54	19-55	20.70	26.00	28.00	32.50	34.16	39.75	300	10
Form Am (spring)	10-66	29-62	28.22	33.50	35.75	45.50	44.44	50.50	266	12
<i>Cooperative Biology Test</i> Form Y (fall)	0-62	20-72	14.50	26.50	22.07	36.50	31.94	40.00	288	12
Form X (spring)	0-51	6-70	11.27	14.25	16.90	27.00	26.29	35.75	270	11
<i>Dunning Physics Test</i> Form Bm (fall)	7-59	26-55	21.75	28.00	26.36	36.50	32.83	47.00	120	6
Form Am (spring)	6-71	29-61	18.40	31.00	27.50	34.50	34.33	56.00	110	6
<i>Cooperative Physics Test</i> Form Y (fall)	0-58	21-48	15.13	24.00	22.00	27.50	27.25	47.25	119	6
Form X (spring)	1-61	23-62	17.75	29.25	25.50	36.00	32.83	60.75	100	7
<i>Anderson Chemistry Test</i> Form Bm (fall)	2-72	19-75	22.79	26.88	29.00	31.38	35.00	39.75	80	31
Form Am (spring)	11-72	23-79	30.25	36.88	41.25	45.25	50.81	53.13	79	31
<i>Cooperative Chemistry Test</i> Form Y (fall)	0-59	5-49	6.34	10.15	10.43	16.00	16.11	20.75	83	31
Form X (spring)	0-60	3-73	9.08	12.75	16.40	20.50	25.92	37.50	79	30

ticipating Group is noticed in the third quartile scores. In the fall, the Participating Group had a score advantage over the "control" group of 47.00 points to 32.83 points. In spring this advantage had risen to 56.00 points for participants compared with 34.33 points for the Control Group. It should be pointed out, however, that the number of pupils participating both from biology and physics classes was small; this could easily exaggerate the apparent results. The *Cooperative Physics Test* for both the Control and the Participating Groups in both fall and spring maintained, with a little variation, about the same pattern as the *Dunning Physics Test*. That is, the Participating Group achieved better in each quartile and gained the most in the upper quartile.

Again, it is impossible to say whether this gain and spread is a function of the ability of the participants in the program, or is due to participation in the program, alone—or is due to both.

Lastly, in the fifth-period science activity, the chemistry pupils appear. Examining the last column of Table 7 reveals that most of the participants in this fifth-period activity have come from the several chemistry classes. Again the higher level of achievement on the part of those pupils who participated in the activity compared with those pupils who did not is observed. On the *Anderson Chemistry Test* in fall the Participating Group had a median score of 31.38 while the Control Group had a score of 29.00. In spring, on an equivalent test form, the Participating Group had a median score of 45.25 points and the Control Group a median score of 41.25 points. Other fall-spring quartile scores on this test are comparable. The quartile scores for both groups on both forms of the *Cooperative Chemistry Test* demonstrate approximately the same pattern as found in most of the other tests.

In general, it could be said that the pupils participating in the fifth-period science activity seemed to achieve higher in fall testing and in spring testing. In some instances, however, the participants lost some of the score point advantage exhibited in fall. Speculation on the reasons for this would include conjecture as to the validity of the test in relation to the learning expected. A critical attitude should be maintained on the method of quantitative evaluation attempted.

#### SATURDAY ACTIVITY GROUP COMPARED WITH "CONTROL" GROUP ON ABILITY AND ACHIEVEMENT

As previously pointed out, a discussion of the characteristics of the Saturday group offers an even more involved challenge than the fifth-period group. In the case of a description of the ability of the group, on the basis of the *A.C.E. Psychological Examination*, all the participants and the "Control" Group are considered at once. However, since the Saturday group was composed of pupils from four different grade levels a rather involved tabulation is deemed necessary in presenting achievement test data. After the previous onslaught, it is hoped that the reader will bear with the problem for just one more round.

### Ability of Saturday Participating Group Seems Higher

Table 8 gives the percentile ranks on the A.C.E. *Psychological Examination for High-School Students* using Minnesota Norms, for the Saturday group. An examination of this table shows, as in the two previous groups, that the participants in the activity were "on the average" of higher ability than the non-participants. Over one half of the participants in the Saturday program were found above the 84 percentile

TABLE 8. Distribution of Percentile Ranks on the *American Council on Education Psychological Examination for High-School Students*, Minnesota Norms, of the Alexander Ramsey "Control" Group Compared with the Participating Groups in the Saturday Science Activity, 1957-58

Percentile Rank A.C.E.	Group				Percentile Rank A.C.E.	Group			
	"Control"		Participating			"Control"		Participating	
	No. of Pupils	Cumulative No.	No. of Pupils	Cumulative No.		No. of Pupils	Cumulative No.	No. of Pupils	Cumulative No.
99+	16	827	8	77	50	12	316	1	13
99	17	811	2	69	48	18	304	—	
98	22	794	4	67	46	15	286	—	
97	9	772	3	63	44	14	271	—	
96	7	763	2	60	42	20	257	—	
95	13	756	6	58	40	19	237	1	12
94	20	743	1	52	39	1	218	—	
93	9	723	2	51	38	16	217	1	11
92	11	714	3	49	36	9	201	1	10
91	9	703	2	46	34	13	192	2	9
90	11	694	2	44	32	19	179	2	7
89	13	683	1	42	30	11	160	—	
88	20	670	1	41	28	7	149	—	
87	23	650	—		26	11	142	1	5
86	7	627	—		24	17	131	—	
85	8	620	3	40	23	7	114	1	4
84	14	612	1	37	21	10	107	—	
82	7	598	1	36	20	12	97	1	3
81	18	591	—		18	6	85	1	2
79	10	573	—		17	7	79	—	
77	18	563	1	35	16	4	72	—	
75	24	545	—		14	5	68	1	1
74	15	521	2	34	13	7	63	—	
72	18	506	4	32	11	6	56	—	
70	19	488	3	28	10	8	50	—	
69	21	469	—		9	4	42	—	
67	18	448	3	25	8	11	38	—	
65	14	430	4	22	7	6	27	—	
63	18	416	1	18	6	3	21	—	
61	15	398	—		5	8	18	—	
59	11	383	—		4	2	10	—	
57	14	372	2	17					
54	24	358	1	15	2	3	8	—	
52	18	334	1	14	1	5	5	—	

TABLE 9. Quartile Scores on the Equivalent Test Forms in General Science, Biology, Physics, and Chemistry of the Alexander Ramsey "Control" Group Compared with the Participating Group in the Saturday Science Activity, 1957-58

TABLE 9. Quartile Scores on the Equivalent Test Forms in General Science, Biology, Physics, and Chemistry of the Alexander Ramsey "Control" Group Compared with the Participating Group in the Saturday Science Activity, 1957-58

Name of Test	Range of Scores		First Quartile $Q_1$		Median $Q_2$		Third Quartile $Q_3$		Number of Pupils	
	"Control"	Participating	"Control"	Participating	"Control"	Participating	"Control"	Participating	"Control"	Participating
Read General Science Test Form Bm (fall) Form Am (spring)	5-66	36-70	32.20	48.75	39.72	54.50	46.81	57.88	439	17
	11-69	41-70	37.58	55.75	44.76	60.67	53.05	64.00	429	17
Cooperative General Science Test Form Y (fall) Form X (spring)	0-71	13-71	16.91	35.75	24.74	45.00	33.05	52.38	438	17
	2-75	33-76	22.56	43.50	32.60	52.50	42.40	61.50	423	16
Nelson Biology Test Form Bm (fall) Form Am (spring)	9-54	19-55	20.73	40.25	28.05	46.00	34.25	53.25	305	5
	10-66	52-62	28.39	52.25	35.70	54.50	44.39	59.00	272	6
Cooperative Biology Test Form Y (fall) Form X (spring)	0-62	38-72	14.65	38.13	22.43	51.00	32.08	53.25	295	5
	0-51	31-70	11.23	35.75	16.90	37.00	26.21	47.25	276	5
Dunning Physics Test Form Bm (fall) Form Am (spring)	7-59	22-36	21.77	27.00	26.38	50.50	33.83	33.00	120	6
	6-71	28-41	18.40	29.00	27.50	32.50	35.75	34.25	110	6
Cooperative Physics Test Form Y (fall) Form X (spring)	0-58	21-47	15.08	23.25	21.50	26.75	28.63	33.75	118	7
	1-62	23-57	17.75	24.88	26.00	27.00	33.50	41.75	100	7
Anderson Chemistry Test Form Bm (fall) Form Am (spring)	2-46	13-75	21.67	26.31	28.50	31.38	33.33	39.25	50	61
	11-58	12-79	27.75	37.75	36.67	45.88	47.38	54.38	49	61
Cooperative Chemistry Test Form Y (fall) Form X (spring)	0-22	0-59	6.18	9.69	9.33	15.75	14.58	20.75	55	59
	2-36	0-73	7.58	15.70	14.00	22.00	21.38	33.50	49	60



rank in this measure of ability. Of the Control, or Non-participating, group, one half were found above the 61 percentile rank. Only one Participant out of 77 fell below the 18 percentile rank, while 79 of the 827 Non-participating Pupils were located below the 18 percentile rank.

*Achievement of the Saturday Participating Group Was Generally Higher*

The data in Table 9 shows that the Saturday group, on the whole, achieved better than the Non-participating Group—in a pattern similar to each of the other activity groups.

On the *Read General Science Test* given in fall, the grade-nine pupils participating had a median score of 54.50 points, compared with a median score of 39.72 for the Control Group, a difference of 14.78 points. By spring, on an equivalent form of the same test, the Participating Group median had risen to 60.67 points for the participants. A similar gain in advantage by the Participating Group over the Control Group developed in the fall-spring results in the first and third quartile also. On the *Cooperative General Science Test* the grade nine pupils in the Participating Group had a fall median of 45.00 points compared with 24.74 points for the Control Group. In spring testing the participants showed a median of 52.50 points compared with 32.60 points for the non-participants. The first and third quartile scores showed a similar pattern, as an examination of Table 9 reveals.

Moving to the biology pupils, Table 9 indicates that the Participating Group registered a median of 46.00 points in fall compared with 28.05 points for the Control Group, and a median of 54.50 points in spring compared with 35.70 on the *Nelson Biology Test*. The first quartile scores on this test for the two groups shows the Participating Group with a 19.52 point advantage in fall, and a 23.86 point advantage in spring. Third quartile scores show a 19.00 point advantage for the participants in fall but only a 14.61 advantage in spring. The difficulties experienced with the *Cooperative Biology Test* were explained earlier. The same decrease in all scores from fall to spring is apparent here also. Suffice to say that the Participating Group again began with an edge over the Control Group, and maintained this edge through spring testing.

Those participants enrolled in physics or electronics classes show somewhat less husky gains from fall to spring in both the *Dunning Physics Test* and the *Cooperative Physics Test*. On the *Dunning Physics Test* the participants recorded a fall median of 30.50 points and a spring median of 32.50 points. At the same time the Control Group recorded a fall median of 26.38 points and a spring median of 27.50 points. On the first quartile fall-spring scores the participants climbed from 27.00 points to 29.00 points, while the non-participants actually went down hill, dropping from 21.77 points in fall to 18.40 points in spring. Third quartile scores for both groups rose. In this latter instance the Non-participating Pupils held a slight edge over the participants on both fall and spring scores. In fall the non-participants had a third quartile



score of 33.83 compared with the participants' 33.00. In spring the non-participants had risen to a score of 35.75 and the participants to 34.25. The *Cooperative Physics Test* median scores for the two groups give the Participating Group an advantage of 26.75 to 21.50 points over the Control Group in fall, but only a 27.00 to 26.00 edge in spring. A first quartile comparison of the groups shows a 23.25 to 15.08 point advantage to the Participating Group in fall and a 24.88 to 17.75 advantage in spring. The Non-participating Group lessened the gap in both the first quartile and median on this test. In the third quartile on the *Cooperative Physics Test* the Participating Group again asserted itself. In the fall the Participating Group had a third quartile advantage of 33.75 points to 28.63, a difference of 5.12 points. In spring the participants widened the gap to 8.25 points with a 41.75 to 33.50 edge over the non-participants.

Finally, Table 9 shows the quartile scores on two sets of chemistry tests administered to all chemistry classes. It will also be noted that the chemistry pupils had by far the most participants in this Saturday activity. An examination of the table indicates that the Participating Group increased its lead between the fall and spring tests over the Non-participating Group in all quartiles on the *Anderson Chemistry Test*. In fall the Participating Group had a first quartile score of 26.31 points while the Control Group had a score of 21.67 points. By spring the Participating Group recorded a first quartile score of 37.75 points compared with 27.75 points for the Control Group. A similar gain for the Participating Group occurred at the median. In fall the median for the Participants was 31.38, compared with 28.50 for the Control, and in spring the Participants climbed to a median of 45.88 compared with 36.67 for the Control. In the top quartile the difference was less pronounced, but still substantial. The Participating Group had a fall advantage of 5.92 points, 39.25 to 33.33, and in spring raised this to 7.00 points, 54.38 to 47.38 points. The last test to be considered is the *Cooperative Chemistry Test*. Here, again, the Participating Group ranked higher at each quartile than the Control Group both in fall and in spring. Comparative medians for the two groups in fall, as shown in Table 9, are 15.75 to 9.33, a difference of 6.42 points. In spring the medians were 22.00 and 14.00, a difference of 8.00 points. The first and third quartile scores showed an even greater enlargement of the gap between the two groups. In fall the Participating Group had a first quartile score of 9.69 compared to 6.18 for the Control Group, a difference of 3.51 points. By spring the Participating Group had a score of 15.70 compared with 7.58 for the control. This is a difference of 8.12 points. A larger gain occurred at the third quartile. In fall the third quartile score for the Participating *versus* the Control Group stood at 20.75 to 14.58, a spread of 6.17 points. In spring the two groups compared with the third quartile scores of 33.50 to 21.38, or a 12.12 point difference in favor of those who participated.

It would seem that the rather considerable bulk of numbers and comparisons could be summarized something like this: if any credence can be put in the test scores, those pupils who participated in the science activity program under the supervision of non-certificated laboratory assistants were "on the average" pupils of a little higher ability, who knew more science at the beginning of the school year than their non-participating classmates, and who knew more at the end of the school year than their non-participating classmates. Since this past involved section can really serve only to describe some of the characteristics of the participating groups of pupils, it is neither wise nor pertinent to attempt to establish casual relationship. The forthcoming sections of the report will undertake the subjective evaluation and criticism of the project and its study.

#### PROJECT EVALUATED AS A QUALIFIED SUCCESS

The report, thus far, has outlined the project and described, in a limited way, the Participants and the Non-participants. By this time the reader is probably quite impatient for some expression of success or failure, happiness or disappointment, with the project. After a mile of words and numbers, the reader is probably wondering whether any answers to the four questions listed as purposes for the study will be offered. The point of answering the questions, as well as possible, has arrived. However, as happens with discouraging regularity, the results of the study conform to the questions asked only with reluctance. It seems advisable, for the sake of clarity, to give a capsule answer to each of the questions under study, followed by a general discussion. Caution must be exercised in interpreting the statements, for alone they are not sufficient. The questions may be answered somewhat as follows:

1. What benefits may be derived from additional laboratory experiences under the supervision of non-certificated project assistants?

It seems that the additional experiences attract many of the better pupils and encourage them to work on projects of value in becoming research minded. This was much more true of the senior high-school pupils than of the ninth-grade pupils. The non-certificated part of the project assistant was not an important part of his effectiveness; his individual personality most certainly was. There may be many benefits which have not been measured—interest, manipulative skill, *etc.*

2. How can maximum use be made of the science facilities available?

Both the during-school activities made fair use of the laboratory facilities. Problems of uninterested pupils interfering with interested pupils in purposeful work hampered the use in these periods. The after-school period made very poor use of the facilities (and of the assistants' time). By far the best, and perhaps maximum, use of both the facilities and assistants' time was made in the Saturday morning period.

3. Who will benefit most from the extended services—the gifted student, the average student, or the less than average student?

It seems that the gifted pupils were more often the ones who availed themselves of the additional laboratory experiences, thus it might be concluded, they benefited more. Average and below average pupils also par-

ticipated and some seem to have benefited while others did not, as with the more gifted. The answer would depend upon the particular pupil.

4. Is it possible to have larger classes and to supplement these classes through extra time provided in the laboratory for working on projects related to the classroom and still have a desirable learning situation?

No "large classes" were set up to seek an answer to this final question. However, a deductive answer might be given. The whole project served to increase substantially the teachers' work load. This would seem to indicate that even with fewer but larger classes no gain would be made on the teachers' work load. Establishing larger classes in an attempt to provide extra laboratory time for the pupil would seem to offer some scheduling difficulties and space problems which could not be easily solved. Experience in other areas would indicate that the good learning situation revolves about the amount of time each teacher can give each pupil, whether in the laboratory or the classroom.

The next several pages of this report will amplify the opinions expressed above. It is hoped that additional comment in various facets of the program will serve to guide others who may be considering expansion of their science programs. While much of the discussion may have a negative flavor, it is in the interest of pointing out many mistakes and in helping others avoid the same errors.

#### EXPERIMENTAL WEAKNESSES OF THE STUDY WON'T PERMIT SETTING OF CAUSE-AND-EFFECT RELATIONSHIP

At the expense of belaboring the point, attention is again drawn to the experimental weaknesses of the study. Cause-and-effect relationships cannot be established which is regrettable. However, under the conditions of reality imposed, it is generally felt that all parties did the best they could. Within the time for planning available and the immense scheduling task facing all schools, but particularly the suburban districts, no other method of conducting the study seemed feasible. It is apparent that subjective judgment is the backbone of any evaluation made here.

#### BEFORE AND AFTER TESTING INDICATES THAT "ON THE AVERAGE" THE BETTER PUPILS PARTICIPATED

While the testing-retesting program was fairly extensive, at least in the one year, evaluation or conclusions from it can be summed up rather briefly. It can be said that the level of ability of the pupils who participated in the program was higher than the level of ability of those who did not participate. This was true even though no qualification of intelligence was established for enrollment. Perhaps, in this period of great concern for extending opportunities to the better pupils, the program receives some vindication on this basis alone.

The achievement test scores point in the same direction; that is, generally the pupils who participated achieved better than the non-participating pupils in the fall and continued to achieve better than the non-participating pupils in the spring. In several instances the par-

ticipants widened the achievement gap between themselves and those who did not participate. Success on the achievement tests cannot be assumed to be a result of enrollment in the program, since, as a group, the participants had more ability and, consequently, would be more likely to achieve more. Unfortunately, there is no way of determining whether the achievement is a reflection of interest because of the extended opportunities. Furthermore, the specialized nature of most of the projects worked on by pupils might bring them to a high level of understanding in a single area which might not appear in the achievement tests.

#### PARTICIPANTS IN PROJECT SHOW A HIGH INTEREST IN SCIENCE CO-CURRICULAR ACTIVITIES

What evidence is there that those who participated in the project develop great interest and activity in science? The answer would seem to be found in the project and activity which reached completion. There is no doubt that the science interest and activity of most of the pupils in the program increased as the year progressed. If project completion and entrance in the Regional Science Fair are taken as criteria, the program appears very well. Alexander Ramsey had 36 entrants in the Regional Science Fair. Of the 36 entrants, 26 participated in the project. Twelve first place and 16 honorable mention awards went to Alexander Ramsey entries. Nine of the first place awards and 13 of the honorable mentions went to pupils who had participated in the science program. In state-wide competition, two Alexander Ramsey pupils received first place awards and both of these had availed themselves of extended laboratory activity in the project. Nearly all of the work on the Science Fair entries was done during the extra laboratory sessions. This would seem to provide ample testimony of interest in science, and the value of giving the pupils access to the facilities and adult guidance in the work.

This year, Alexander Ramsey established a chapter of the Minnesota Junior Academy of Science. This group has distinguished itself as being highly selective, requiring the applicants to have at least a "B" average scholastically, and recognition in the field of science. Of the first ten members of the Junior Academy, half were also participants in the extra science activity.

Other co-curricular activities such as field trips and attendance at special science lectures found those pupils in the project making up the bulk of the groups involved in these various affairs. Again it could be said that the project appealed mainly to those pupils who are seriously interested in science.

A new venture called "Science Recognition Day," presently under the auspices of Minnesota Mining and Manufacturing Company, found about the same pupils being honored as received honors in other extra science activities. This "Recognition Day" has special features which deserve mention here. A very few top science students from this and

near-by schools are selected to participate in a rather different form of recognition. As a reward for the pupils' interest and achievement, they are awarded certificates of accolade by the company. In addition, groups of two or four pupils are given half a day to spend in Minnesota Mining's Central Research Laboratories with a scientist as he goes about his daily work. This certainly is a pioneering step for industry and it generated pupil enthusiasm to an unheard of degree.

Whether or not the pupils' participation in the extended laboratory experiences accounted for their interest and activity in other science affairs, or *vice versa*, is not possible to determine. However, it needs to be pointed out again that there seems to be a demand and a need for these extra opportunities.

#### THE STAFF FELT THE PROJECT WAS BASICALLY GOOD, BUT THAT SOME FEATURE OF ITS OPERATION NEEDED DRASTIC REVISION

The discussion of many staff meetings, as well as informal discussion, produced the judgment that the whole idea of having extended laboratory experiences was basically a good one. However, there were areas of highly critical reaction. In January 1958, the staff of the science department drew up an "Estimate of the Situation" with regard to the whole project. Six major areas of discussion and criticism were catalogued in this written memorandum. The areas of concern were as follows:

1. Restatement of the purposes of the program
2. Development of interest and enthusiasm for the program
3. Preparation work of the project assistants
4. Selection of pupils for the program
5. Development of activities in the program
6. Selection of the project assistants for the program

The memorandum then proceeded to deal with each of these in turn. The following excerpts from the memo offer much food for thought.

##### 1. *Restatement of the purposes of the program*

The science department reaffirms its belief that the program is essentially that of enrichment. It is understood that two of the expressed purposes of the program are to help the teachers work with more pupils and to relieve some of the teachers' load to permit expanded activities in some neglected areas. These purposes cannot be satisfactorily met at this time in the group's opinion. While helping the teachers in the sense of making the teachers' job easier—in order that more pupils may be served—may be a purpose of the program, it is one which cannot be realized since the program actually adds considerably to the work-load and responsibility of the classroom teachers. This is true because of the planning which must be done and the increased responsibility which is developed toward individual pupils.

None of the science staff objects to the added work if it is productive of results, if there is truly an enrichment which makes it possible for some pupils to progress well beyond a point which the regular classroom-laboratory activity will permit.

## 2. *Development of interest and enthusiasm for the program*

There seems to be greatly varied interest and enthusiasm for the program. It has become evident that the classroom teachers need to exude enthusiasm toward the program if it is to succeed. This has been found to be particularly true in the after-school program, especially on days when lectures are given by visitors. The group feels that the teachers need to push the program in the classroom in order to make it clear that the pupils have a real opportunity to extend themselves and to do some work beyond what they normally would be able to do in school.

The staff has felt that the value of the program would be enhanced if it were considered an honor to be a part of it. It seems perfectly justified to the staff that there should be a premium attached to membership in the activity. There is considerable evidence that many pupils (in the fourth hour especially) simply regard the program as a place to while away their time. The program lacks the prestige which makes it a highly desired honor to belong. Some selection would seem to offer a partial remedy to this. There is no intention on the part of the staff to introduce snobbism to the program, but a real appreciation on the part of the pupils as to their opportunity needs to be built.

No restrictions on the basis of intelligence or academic standing have been contemplated. Rather, the qualifying factor, it was the consensus of the group, should be *interest*. If a pupil shows a genuine interest in purposeful activity, he should be given the opportunities in the program which are commensurate with his abilities. Conversely, if a pupil demonstrates no real interest and appreciation, he should never have been placed in the program or he should be summarily dismissed from it. Selection of those interested will encourage their interests. With less interference, there will be more accomplishment and enthusiasm will grow correspondingly.

## 3. *Preparation work of project assistants*

The question was raised concerning the actual amount of time spent by the assistants in preparation for their time in the laboratory. The assistants declared that they spent varying amounts of time, depending upon the requirements of the particular activity they were supervising and the demands of individual pupils working on projects. It was generally agreed that the project assistants should expect to spend time preparing for their supervisory activities in much the same fashion that a classroom teacher prepares for class. This would be particularly applicable to any background study that the project assistant found necessary to help a pupil properly with a project.

It was felt that much of the preparation time of the project assistants should be used in conference with the various science classroom teachers. Any time and effort to increase the liaison between the project assistants and the classroom teachers was felt by the group to be necessary and worth while.

## 4. *Selection of pupils in the program*

It is the opinion of the science department that the pupils with whom we are concerned may be characterized as follows:

- (a) Those who are progressing, or could progress, significantly and independently in the program
- (b) Those in the program who could progress satisfactorily if some of the disruptive influences were eliminated
- (c) Those who are not interested in the program and who need to be eliminated for the benefit of the group



- (d) Those who are not in the program and who want to be but are currently involved in other activities.

It is the consensus of the science teachers that the pupils in classifications (a) and (b) present no problems. Those in (c), those exhibiting no interest, should be excused from further attendance in the science activity:

#### 5. *Development of activities in the program*

With due consideration for the pupils' capacities and needs and the objectives of the program, two viewpoints as to the type of framework necessary for a successful program are apparent. These are: (a) the "open-end" project; and (b) the carefully delineated structure.

The capable pupil with sufficient understanding and proper understanding needs to be given the "room" to expand, the open-end laboratory, the supervised time, and the facilities and equipment to extend himself genuinely in the project of his choosing.

The less capable, or perhaps the less interested, pupil who wants to profit by extended laboratory experience needs to be provided the supervision, time, facilities, and equipment to enrich his science learning and to increase his motivation. This will require a structured (but not regimented) approach with specific things to be done in specific areas in a specific manner. Any one of several experiments could be performed—each beyond the regular classroom requirements. Any structuring done and experiments conducted should relate quite directly to the classroom and should be a reflection of the curriculum. The activity should be truly an enrichment of the curriculum. In the organization of the activity, groups of pupils could be working on different experiments simultaneously. Any pupil could move from a structured activity to the open-end, or *vice versa*, as the occasion and interest demanded.

It was the intention of the science department to "structure" the activities of the ninth-grade general science pupils in the program for the first semester. This was done in varying degrees. Specific experiences were developed, or specific demonstrations were planned, to augment the general science instruction. Some teachers detailed carefully what they felt would provide the greatest degree of enrichment; some provided a general outline and depended upon the project assistants to exercise imagination in providing that which seemed to offer the pupils the supplementary experiences.

This structuring met with some success and some failure. In some instances the pupils responded well to demonstrations, in some they did not. In some instances the pupils responded well to individual or group activity, in others they did not. More experience is needed in this to permit a sound judgment as to what is good and useful for whom. There seemed to be a few cases in which the pupils needed to be given a free rein, not being included in the structured approach. There seemed to be a minimum number of these in grades nine and ten, however. There were also cases, of course, where no approach would result in a desirable learning, or any learning at all. The major difficulties encountered in the structured approach were the problems caused by:

- (a) Uninterested pupils who disrupted the activity, misused equipment, etc., which usurped the project assistants' time in useless supervisory activities
- (b) The lack of a complete, continuous, and consistent structure of activities, which spread, occasionally, an atmosphere of uncertainty over the

- activities and made it necessary for the project assistants to improvise.
- (c) The overlapping of attendance schedules which made it impossible to avoid frequent, and occasional, duplication of experiences for some pupils, with the consequent loss in interest and gain in confusion.

The first of these difficulties will be solved by the elimination of those pupils lacking interest. The second difficulty involves more far reaching and laborious attacks. It would seem that definite experiments, outlined in detail, printed, and even specifically assigned would be necessary. The "structure" for an entire year's work, it would seem, would need to be erected with the curriculum paralleled and extended. This would involve a considerable amount of work, particularly for the general science teachers. It would need to be an integral part of the curriculum development and the subsequent course of study.

The third of the difficulties will require a re-examination of the scheduling into the science program. In the structured situation, it seems essential that there is not an overlapping of pupils. For example, some pupils may be in the activity on Monday and Tuesday, and others on Tuesday and Wednesday. If something new were begun on Monday, it would have to be repeated again on Tuesday, thus repeating the experience for some pupils. Some system should be devised which permits these pupils to be scheduled in "time blocks." If a pupil is interested in the science activity program, he may, in order to permit a non-overlapping schedule, have to place his interest in science ahead of his interest in some other activity. Or the pupil may have to avail himself of some time other than during the activity period to participate. This may appear to be a ruthless fitting the pupil to the schedule rather than the schedule to the pupil. However, the maximum good of the pupils interested and the success of the program seem to dictate a more organized approach to the science activity program.

#### 6. *Selection of project assistants*

It is strongly suggested that criteria be mutually established by the administration and the science faculty which will offer guidance in the selection of personnel who serve as assistants. These criteria should be set forth in printed form, and should basically match those considered applicable to any teacher candidate, except for the requirement of certification.

These words of evaluation, criticism, and suggestion coming from the staff of teachers as a group summarize quite well many of the causes for anxiety and failure in the program, or project. Any school administration seriously contemplating extending the science opportunities and engaging either certificated or non-certificated assistants could probably profit from rereading the comments of the persons most closely involved, the teachers.

#### PROJECT ASSISTANTS ALSO FELT THAT THE PROJECT WAS BASICALLY GOOD, BUT REVISION WAS NEEDED

At the conclusion of the school year, each of the four project assistants was asked to submit a written critique of the program to supplement the informal oral discussions. It was asked that these men stress what they felt to be both the strength and the weaknesses of the program and that they make suggestions for improvement. Their response was good and their candid remarks bear repeating.



Robert J. Anderson, a graduate student in dairy products, who assisted in the fourth- and fifth-period activities, had this to say:

The program as it existed for the ninth-grade pupils appeared fundamentally sound. Certain problems which arose seemed related to the screening of the students selected for the science activity. The science activity was in essence a laboratory. One hour was hardly enough time for experimentation when a number of varied exercises were being performed simultaneously. This situation limited the amount of personal attention one could give the students. In addition to this, with a wide range in such factors as intelligence, ambition, and interest, various students would be left behind.

A small percentage of students admitted that their only reason for signing up for the science activity was "they couldn't think of a better place to go" or "there was no place else" to schedule them. Without a formal grading system, motivation became difficult.

The tenth- and eleventh-grade pupils had a much better conception of the science activity and thus had more concrete reasons for being in the program. About the only problem with this group was one of motivation.

I would not attempt to evaluate the student gains from this activity. . . . I feel that the time and effort were well worth the experience.

Mr. Anderson brought up, among others, two points which deserve attention in future programs. These are whether an hour is sufficient time for the activity and the matter of selection of pupils who will participate.

The other assistant in the fourth- and fifth-period activities, James Lien, at the time a senior at Hamline University majoring in chemistry and preparing for teaching, offered many direct and forthright observations. Of particular interest are his comments on the non-certificated assistants and the selection of pupils. Mr. Lien says:

The first issue to be dealt with is the engaging of non-certified personnel to instruct and conduct laboratory sections. Very frankly, I don't feel the employing of outside instructors makes full use of the facilities of the school. This is said for various reasons. First, this outside instructor [Mr. Lien] had the feeling that he was usurping the science teacher's relationship with the student. Secondly, this instructor was not nearly familiar enough with the physical plant, and felt that he was imposing on someone else's classroom. Thirdly, this instructor felt that the students weren't nearly as confident of his authority and ability as they were confident of their individual teachers. Fourthly, the instructor was able to attend only one formal class per day which did not enable him to understand fully the various classroom situations. If the instructor would have had these subtle realizations, he could have benefited the students far more than he was able to do. This situation was supposed to have been alleviated by personal liaison between the instructor and the classroom teacher. This was done, of course, but there were various and frequent occasions that arose that rendered such a liaison impossible.

It is obvious then, that this instructor feels that the positions filled by the various outside instructors should have been filled by the classroom teacher. If this suggestion were to be carried out, the conditions mentioned previously

would not even be applicable. For example, the teacher could transfer the subtleties of the classroom situation directly into the program. Also, the teacher would not be lacking the confidence of the students. One major reason for this would be the teacher's experience as opposed to the lack of experience of the instructor.

The previous suggestion might lead one to the conclusion that the program would, under this situation, merely be the continuation of the classroom. This need not be true, for the program could serve to enrich the student much the same as it has in the past. The classroom type of situation need not, and should not, be extended into the program.

From the above discussion, one might conclude that I consider the program virtually ineffective. This is not true. I felt that the students who participated in the program were made better students by doing so. I do feel that there were areas that could improve.

Concerning the problems of which students should be permitted to participate in the program, I feel that only those students who are sufficiently mature and trustworthy to work independently should be allowed to participate. This, I feel, would eliminate any ninth-grade program but a rigidly structured one. A structured program was rendered literally impossible this year because of program conflicts which led to an acute situation involving duplication in presentation. I do feel that some ninth-grade students could work independently, but these students, then, may as well participate in conjunction with the senior high-school students.

I feel that students of various interests should be allowed to participate. The only qualification would be that any student who participated would have a specific project or assigned experiments on which to work. This program would then alleviate the problem of scheduling. That is, students could then be scheduled in any manner without hindering the instructor.

Field trips were taken, with success, this year, but many more should have been taken. I would add the qualification that these trips should never be conducted during school time. This would eliminate the student whose major interest would be being excused from regular classrooms. I approve of field trips primarily because the program should not be limited to the school, but should use community resources as well.

... My greatest hopes concerning the program are that some of the students were successfully enriched. . . . I have learned an immeasurable amount concerning the adolescent and the responsibilities of a classroom teacher. Further, I feel confident that many students were greatly enriched, for many students expressed this feeling to me. The students themselves have looked upon the program as an opportunity for enrichment. There are difficulties to be taken care of, such as the lack of prestige the program has, but my personal feeling is that restricting the program to only those students of scientific inclination would eliminate this problem. I feel that, if the science teachers would confer during the first part of the school year and recommend to the program only those students who the teachers feel are worthy of the program's objectives, the program could easily enrich the students successfully.

I don't intend to infer that only the more academically advanced student should participate. I have observed very encouraging growth in some of the so-called "slower" students. My major criterion for participation in the program would be scientific interest on the part of the individual student.

I would like to say that the program has, and can be, highly successful and useful in my estimation. However, there is room for improvement. . . .

David White, an undergraduate studying bacteriology at the University of Minnesota, and project assistant in the after-school program, draws attention to reasons he felt that the after-school activities were probably the least successful of all periods. Of particular emphasis are the selection of the pupils who participate and the selection of the project assistant who supervises. Mr. White says:

As a whole, I do not feel that the [after-school] project was a success. Few people participated at all, and even fewer with any degree of regularity. The six lectures were attended by an average of twelve students. Of this group, about eight attended fairly regularly. On days when no lectures were planned, attendance was very sporadic, sometimes non-existent. Quite often two to four students would come in to make up work that had been missed in their chemistry class laboratory periods. Except for the last two weeks before chemistry class projects were due, little work was done on projects in the laboratory. The last minute scramble to complete their projects brought the regular attendance of about eight people. Obviously, this amount of participation is not sufficient to merit the effort.

Below I have listed a few of the reasons why I think attendance has been low:

- (a) Because it is after school, the program must compete with sports events for student interest.
- (b) Some students work after school.
- (c) After the buses leave, many have no transportation home.
- (d) Too few students appreciate the opportunity available to them.
- (e) Too many students are choosing projects which involve only library research and little handicraft, with little or no laboratory work necessary.

As long as the program is held after school, the first two problems will always be with us. The transportation problem may be solved by cooperation of the students who have cars, and/or enlisting the aid of parents. But a very basic change will be necessary to cope with the fourth problem—student apathy. In the following paragraphs I will suggest a plan that I think will solve this and the last problem as well.

To be practical, we must take a more realistic and less idealistic view of the situation. Based on the assumption that more is to be gained by providing enrichment for good students who will be allowed to participate, the choice would be made on the basis of science grades and teacher evaluation of those students who indicate interest. The idea of a Junior Academy of Science would be developed. It should have some degree of internal organization, and every effort should be made to build it into a prestige-carrying organization. Publishing a list of activities for the coming year in advance such as field trips, lectures, and perhaps a banquet at the end of the year, should help create interest. It must be publicized and glamorized to the extent that students want to become members.

The group should have perhaps three definite work nights every week, and a minimum number of unexcused absences to remain a member in good standing. The students would work in pairs, and the projects chosen with the

aid of the instructor. These projects should be of a research nature with emphasis on correct lab technique, collecting and evaluation of data, and writing a report on the results. Actual laboratory work should comprise by far the largest part of these projects. Library research can, and usually is, learned elsewhere. At the end of the year, an award should be given to each member of the pair that had done the best work. Some real importance should be given to this award by publicizing it in the school paper and including it in the awards given at graduation. Perhaps even a short article could be published in the *St. Paul Dispatch*.

Careful choice of an instructor is very important. He must be a person with a lot of enthusiasm and personality. This is especially important because an instructor in this position does not have a captive audience; he must make the subject under discussion capture the student's interest and imagination, if possible. Furthermore, I do not feel a B.S. degree is sufficient for this type of position. An M.S. is necessary and a Ph.D. is very desirable. Of course, I realize it is extremely difficult to find a man with these qualifications, but perhaps, if the compensations were made attractive enough, it could be done. I don't think it would be impossible to find a member of the University faculty from the department of chemistry who would consider such a position.

This would, of course, comprise only one part of the project as a whole, but I think an especially high-powered, well-integrated group such as this should be formed to accommodate the most able students and to overcome their apathy. The activity periods and Saturday morning sections could accommodate those students who have less interest and ability. In this way, I believe something of value can be accomplished. Continuing under the system in effect this past year will produce little gain for the effort.

Foregoing are my criticisms of the after-school section of the . . . [program], and a suggestion as to how it might be made a success in the future. I think the basic idea of science enrichment is a fine one, and I hope a way can be found for making it practical.

The fourth project assistant, Lawrence A. May, a quality control engineer at Minnesota Mining and Manufacturing Company, points out the high level of parent interest formed in the Saturday program. He also finds agreement with the other assistants in the matter of pupil selection. Mr. May says:

. . . The data indicate that we had strong senior attendance and good freshman attendance, but were weak in sophomore and junior classes. The interest by students from other schools is also quite clearly manifested, considering that this attendance was not solicited. Another more related group of attendance was that of former Ramsey graduates. Parent-student interest in science projects was quite evident. . . . Interest ranged from active participation in the project to keen observation of its development.

It seems advisable that some basic requirements be established by the school for admission of the students into an extracurricular activity of this kind. These criteria, although difficult to describe in writing, would include such factors as interest in science, basic intelligence, and recommendation by the former teachers of the student seeking entry to the program.

I certainly feel that a program of this type has tremendous value in our educational system. . . .

It would seem that better pupil selection is an almost universally expressed need. The classroom teachers and the project assistants both have stressed in writing the need for interested and active pupils if full advantage is going to be taken of an extended science program. Of additional importance is the expressed opinion that the project assistants themselves need to be persons of dynamic personality. The inescapable conclusion reached from observation is that the more dynamic and enthusiastic the project assistant, the more successful was the part of the project which he supervised.

The judgment of virtually everyone connected in any way with the project is that it was worthwhile, but that modification and improvement is badly needed. It is the further estimate that the use of non-certificated assistant laboratory personnel was not of itself a factor of importance. The pupils, the time of day, and the personal characteristics of the individuals assisting appeared to be the critical factors.

#### THE COST OF THE PROJECT WAS MODEST FOR THE SERVICES OBTAINED

The cost of such a science project looms as a very important element, whether the program was wholly successful or only moderately successful. If the cost of the entire operation would be prohibitive in cost, no degree of success could induce a similar unsponsored venture in other school systems. However, it is the belief of the staff at Alexander Ramsey that the expense of the program was not excessive, and would not be prohibitive for most larger school districts. A breakdown of the cost, however, will enable the reader to determine this for himself.

The total cost of the project would not be a particularly meaningful figure to persons contemplating a similar program with the school district bearing the expense alone. A large portion of the cost at Alexander Ramsey was due to the fact that a study was being conducted. The expense of secretarial help in preparing reports, the testing program in the study, and the project evaluator's salary are all expenditures that would not be incurred if a district were not conducting a study of this type. Therefore, the true cost to a district would be the salaries of the project assistants, additional pay for teachers engaged in the project, and the cost of lecturers, supplies, equipment, and various services. At Alexander Ramsey, four assistants received \$4.00 an hour. This figure attempted to take into account time, travel, and inconvenience of work time. On an hourly basis this amount is more than the teachers are paid, yet no really serious complaints arose. In addition to the project assistants, two regular teachers worked their "Tenth Month" in the project. The "Tenth Month" in the Roseville Schools is a flat sum of \$400 for 160 hours of work in some specified task beyond the regular teaching contract. The tabulation below shows the cost in the 1957-58 school year, exclusive of expenses for the study itself.

Salaries of four non-certificated assistants .....	\$3,320.00
"Tenth Month" salaries for two teachers .....	800.00
Equipment .....	324.00
Supplies .....	243.00
Speakers .....	20.00
Publications .....	13.00
Services .....	25.00
	<hr/> \$4,745.00

The cost for personnel only equalled \$4,120.00 less than the amount a beginning teacher with a B.A. degree would receive in the district. The total personnel cost, then, might be thought of at about equal to that of one inexperienced teacher. The equipment purchased as well as the speakers and the publications would benefit the school population beyond the group in the project.

In terms of the pupils served and the hours of scheduled activity—the equivalent of 25 hours each week—the service certainly seems commensurate with the expense.

#### ALEXANDER RAMSEY PLANS TO CONTINUE SOME FEATURES OF THE PROJECT AT ITS OWN EXPENSE

Probably the best testimonial the whole idea of extended science opportunities and the use of non-certified personnel could receive is for the school involved in the study to continue certain features on its own. That is exactly what Alexander Ramsey is doing in the school year 1958-59. In spite of all the difficulties encountered, and the unanswered questions at the year's end, parts of the project (and certain of the non-certificated personnel) are included in the plans for this year. The fourth-period science activity for grade-nine pupils has been dropped. Continuation of the activity during school hours was not warranted in view of the difficulties experienced with this group and the mediocre success of its activities. The senior high-school science activity period in the fifth period is being continued, but on a much different basis than previously. Only senior high-school science students who have been especially selected will now be permitted in the activity. The teaching staff will make the selection and will demand performance. This step is expected to eliminate the problems of apathy so apparent last year. Supervision of the fifth period will be entirely in the hands of regular members of the staff. This again is in recognition of last year's problems and the suggestions which came out of this study.

No after-school program such as last year's is planned. There are plans for a seminar type of meeting on week nights, perhaps at the rate of one a month or six through the year. This activity will be handled through the Junior Academy of Science and will be highly select. The plan for these seminars calls for guest specialists such as professors from the University, or scientists from industry, to be the center and resource



persons of the seminar. It is possible that these will be evening rather than late afternoon sessions.

The Saturday program has blossomed well beyond last year's activities. The ninth- and tenth-grade pupils may now join a science activity which resembles a class. Community resource persons have been drawn upon and will work with one of the teachers in a specific area. The approach is much more structured than has been past practice. In many ways, activity will resemble an adult evening class. For the first nine weeks, a course in lapidary work is being offered by a citizen of the district who is renowned for his work. During the second nine weeks a course in taxidermy is being offered, and during the third nine weeks a course in astronomy is being offered. Both of these, too, will be conducted by local people of well-established reputation. The course in the final nine weeks of the school year has not yet been decided.

In addition to the classes for the ninth- and tenth-grade pupils on Saturday, the biology, chemistry, and physics laboratories as well as the industrial arts shops will be open for senior high-school pupils to work on projects every Saturday morning. In each case a regular teacher will be present to supervise.

Mr. May, the project assistant of the Saturday group during the study, has been retained and will also serve in the laboratories. A more careful selection of pupils is expected to result in many more worth-while activities than has been the case in the past two years.

It is evident, then, that many features of the project were considered valuable enough to continue at school district expense. The mistakes, failures, anxieties, and successes experienced during the project provided many lessons which have led to the development of a program of extended opportunities that the staff at Alexander Ramsey feels will achieve a great deal. At the end of this 1958-59 school year, a much better judgment can be made, but at this time it seems as though Alexander Ramsey will be able to report some highly interesting results to other schoolmen.

#### SUMMARY

The foregoing pages have described the study that was made on the utilization of non-certificated laboratory assistants to relieve teachers and extend science opportunities for students at the Alexander Ramsey High School in Roseville, Minnesota. Many avenues have been traveled to determine whether or not the use of non-school personnel proved to be a sound procedure. It is difficult to pursue the achievement test data beyond a general description of the groups that availed themselves of the extended opportunity and those who did not. It seemed apparent that the additional opportunity for laboratory experience was more often taken by the pupil of higher ability and greater achievement.

Four different activity groups participated in the study—a ninth-grade group and a senior high-school group during the school day, a senior high-school group after school, and a mixed group on Saturday morning.

The judgment throughout the staff is that the activities of the Saturday morning group were the most successful, those during school were fairly successful for the senior high-school group but less so for the ninth-grade group, and those of the after-school group were a failure. All indications are that success or failure hinged on the type of pupil, the ability and personality of the laboratory assistant in working with teenagers, and the time the group met.

The fact that the four assistants were non-certificated seemed to have had nothing to do with their success. It might be noted that the most successful assistant, while now a quality control engineer, was formerly a teacher.

Certain features of the program set up for the study are being continued at school district expense in the school year 1958-59. The Saturday "open lab" policy is being continued. In addition, the industrial arts shops are open. A limited and selected group of senior high-school pupils have access to the laboratory during school time. Specific classes are offered to the ninth- and tenth-grade pupils on Saturday morning. A structured approach was felt necessary with this group. Each nine-week quarter offers them a new interest—lapidary work the first nine weeks, taxidermy the second nine weeks, and a course in astronomy the third nine weeks. The course for the last nine weeks has not been determined. All classes and laboratory hours are supervised by a regular teacher. Additional during-school laboratory opportunities for ninth-grade pupils have been dropped. No after-school offerings are made.

The many mistakes and failures experienced during the study taught many lessons. The staff of Alexander Ramsey feels that now a program can be developed which will benefit the interested pupils, and at a cost which the school district can bear. It is the genuine hope that other schools seeking to expand science opportunities will be able to profit by Alexander Ramsey's mistakes and avoid some of the discouragements before a successful program is developed.



## The Tape Recordings Experiment Is Expanded in Westside Junior and Senior High Schools, Omaha, Nebraska

MRS. RODNEY E. GIBSON

THE Omaha Westside Tape Experiments in 1957-58 represented an extension of the experimentation initiated in the 1956-57 year. The study concerned with, "Ways in Which the Use of Tape Recordings May Produce Improvements in the Utilization of Staff and the Results of Instruction," was sponsored by the Commission on the Experimental Study of the Utilization of the Staff in the Secondary School of the NASSP.

The *first* purpose in this year's study was a verification of the findings of last year; namely, that tape teaching is effective in teaching spelling, and in teaching Conversational Spanish in classrooms where the teachers know no Spanish. The *second* purpose was to determine costs of the various items needed, and savings in time and money of a tape program. The *third* purpose was to acquaint other schools with the problems and the possibilities of a tape program. The hypotheses to be tested were:

1. Spelling can be taught in the seventh grade without teacher supervision.
2. In the eighth grade, a student-operated recorder can teach spelling effectively to a group of 110 pupils with one teacher supervising the group.
3. In the seventh grade, Spanish can be taught by tape, although the teacher knows no Spanish, as effectively as by a regular seventh-grade teacher who knows Spanish.
4. A second year of Spanish-by-tape is feasible in the eighth grade in spite of teacher and pupil turnover.
5. A pupil's liking for spelling is not at all influenced one way or the other by the use of tape.
6. A very simple language laboratory one hour a week without any direct teacher supervision will increase the students' general knowledge of a foreign language and their aural comprehension.
7. The use of tape for giving timed tests in typing results in the saving of the teacher's time for more individual instruction.

Mrs. Rodney E. Gibson is Project Director at Westside Community Schools, Omaha, Nebraska. She was assisted in preparing this report by: Dr. Charles Neidt, Nebraska University; Dr. Frances Hurst, Omaha University; Mr. Glenn Pickrel, Superintendent of Schools, Downers Grove, Illinois; Mr. C. L. Retelsdorf, Superintendent of Westside Community Schools, Omaha; Mr. Kenneth Hansen, Principal, Westside Senior High School, Omaha; and Mr. Rene Hlavac, Principal, Westside Junior High School, Omaha.

## PHYSICAL ORGANIZATION

The spelling and conversational Spanish experiments were centered in the seven seventh-grade classes located in four of the elementary schools, and in the entire eighth-grade class located at Westside High School. In the seventh grades, one recorder on a cart equipped with a movable loudspeaker served two seventh grades. In the eighth grade during the first semester, the spelling class composed of 110 pupils was taught by a student-operated tape recorder. On one wall were three loudspeakers tied into the one tape recorder. One teacher proctored the group which was seated facing the loud speakers along the long tables in the school cafeteria. A portable blackboard was placed in the front of the room. Here a blackboard monitor spelled out the words from time to time keeping step with the tape. The students at the table also kept step with the tape, copying the words as they were spelled out. In case of failure to keep up with the tape or doubt about their own copying, they glanced up at the blackboard for reassurance. The second semester, the large group was broken up into five groups taking their spelling by tape in their regular language arts class. One tape recorder was located in the central tape library. This was wired into the three large language arts rooms. Each language arts room had two loudspeakers, one at each end of the room in staggered formation. A recorder monitor was selected for each period the tape was to be in use. Through a small PA system in the tape library, he checked to make sure that all classes taking spelling at that hour were ready to go at the same time. This operator monitored the program, meanwhile attending to his own worksheet. At the end of the twenty-minute period, he rewound the tape to the beginning of the day's program so that it would be ready for the next monitor. Thus one recorder and one set of tapes in both the large cafeteria group and later in the five smaller groups sufficed to teach 110 pupils.

In the seventh grades, the Spanish program (twenty minutes a day, five days a week) followed the spelling program. Although the recorder was handled by a student during the spelling period, the recorder was usually handled by the classroom teacher during the Spanish period, since in Spanish the classroom teacher was an integral part of the program. In the eighth grades (second-year Conversational Spanish), a monitor came to the tape library for a machine when it was needed and returned it immediately afterward. One class, however, received its Spanish from the centrally located machine through the loudspeakers. In this class, the teacher took little part in the program except to call on various students from time to time, maintain order, *etc.* This approximated teaching by radio.

The high-school language laboratory was at first the subject of much trial and error. In one second-year group, the recorder was brought in during the regular class period once or twice a week. As the room was large, the recorder was attached to two loudspeakers. This was

soon discontinued, however, as the classroom teacher found that she could not do justice to the amount of work she was supposed to cover, and give class time enough for the laboratory, in spite of the amount of good she believed was being done. Volunteers were drawn from the second-semester Spanish classes and from the French classes to give one study period a week regularly to the laboratory and to receive an hour's credit per semester for same. Wednesdays were designated as Spanish laboratory days and Fridays were French laboratory days. At the appointed hour, those signed up for laboratory (having permanently been signed out of study hall for that period on that day) came to the laboratory. Here two tape recorders were set up with six single ear-phones, each plugged into a distribution box which had been attached to the recorder. One recorder was for first-year students and one was for second-year students. At first, a teacher aided in getting the students started; however, within two or three weeks, the pupils came into the room, took their electrical apparatus from the peg board, went to their own recorder where a printed assignment told them exactly what to do, and started to work whether or not there was a teacher present. Occasionally, a teacher checked to make sure everyone was at work. It was found that when five or six students were working with one recorder, from time to time there was unnecessary conversation. The groups were then rearranged so there were never more than four at one recorder. At no time, under this new arrangement, were there signs of anything other than the most serious type of work going on, even though there usually was no adult in the room. We also tried one person at a time, two people at a time, and three people at a time at one recorder. One person at a time at the recorder missed the group interaction and much preferred being part of a group; thus it was determined that two, three, or four people at one recorder at a time was the best arrangement.

Later in the semester, one recorder was moved to a glassed-in room off the library where the pupils could be under the casual supervision of the librarian, and still carry on the needed amount of conversation concerning the lesson without annoying others. For the most part this worked well as long as the directions for the laboratory were explicit. The pupils involved declared that they much preferred being in the tape library, since in the regular library behind glass they at times felt that their friends were staring at them. This could have easily been eliminated if the glass had been frosted part way up leaving the top clear for the librarian's glance as she was standing, but cutting off the gaze of students seated in the library.

In the Business Education Department, the tape recorder was used for timed writings, repeated instructions, and typing to music. It saved an average of fifteen minutes a day of the teacher's time and gave her an opportunity to observe student techniques and work habits. It was also

used for shorthand dictation and recording practice telephone answering.

### THE STUDY

To test again for a second year the effectiveness of tape teaching *versus* teacher teaching, the basic design for the experiments involved the comparison of performance of students who experienced the tape learning situations with the performance of students who studied the subject matter according to regular classroom procedures. Within this general framework variations in the use of tapes were included, such as a 110-pupils section *versus* a normal size class, and some teachers remaining in classrooms during the spelling period with other teachers leaving their classrooms entirely for the twenty-minute period, day after day.

Evaluation of the experimentation was accomplished through the use of standardized tests, locally constructed written tests, and oral tests. These tests were administered at varying times throughout the year, depending upon the subject and the particular units being studied. The majority of the tests, however, were those given at the end of the first semester, and at the end of the year.

To obtain as much assurance as possible that difference between groups with respect to the criterion tests were attributable to the method of teaching being evaluated, statistical control of previous achievement and of general mental ability was accomplished through the analysis of covariance. The use of this statistical technique eliminates the necessity for matched groups.

The report is organized in such a manner that each section is relatively independent of the other sections. The following are shown:

1. Seventh-Grade Spelling—Analysis
2. Seventh-Grade Subject Preference—Analysis
3. Eighth-Grade Spelling—Analysis
4. Seventh-Grade Conversational Spanish—Analysis
5. Eighth-Grade Conversational Spanish—Report
6. French I and French II Laboratory—Analysis

### SEVENTH-GRADE SPELLING

**DESIGN:** The seventh-grade spelling-by-tape experiment involved four groups as follows:

*Experimental Group I*—Tape-taught with teacher remaining in room, but busy with other tasks such as bulletin board displays and correcting papers.

*Experimental Group II*—Tape-taught with teacher leaving the room every day for the full twenty minutes after machine has been set in operation. Teacher returned to the room at the end of the twenty-minute period. She merely glanced through papers from day to day, but corrected the end-of-unit test.

*Control Group I*—Teacher-taught in traditional manner, but using the same word list as the two experimental tape-taught groups.

*Control Group II*—Teacher-taught from regular textbooks. This group did not use the specially prepared word list used by the other three groups. Many of the students in this class studied two spelling lessons a week—a seventh-grade lesson from Monday through Wednesday, and an eighth-grade lesson from Wednesday through Friday. The teacher of this group was not limited to twenty minutes a day. Since this group did not use the special word list (hereafter to be referred to as the Westside Word List), the only scores of this group used in the analysis are the pretest and final test of achievement on the *Differential Aptitude* which is a measure of ability to recognize incorrect and correct spelling.

One type of test used to measure gain in spelling ability was a series of random word tests. The first test, which served as a protest, was constructed by applying a random table of numbers to the word list that would be studied throughout the year. The second test was constructed by dropping down the list to the next available word beneath the word chosen for the first test.

There were twenty units of seventy-five words each in the year's word list. Each unit was designed to include fifteen new words each day for five days, a trial test on the sixth day, and a final test on the seventh day.

The second test was administered after the first five units had been studied. The third test was administered at mid-semester after the first ten units had been studied. The fourth test was given toward the end of the year after the first seventeen units had been studied. Although in the original list some of the more difficult words had been repeated to insure mastery, a repeated word was not used but considered an unavailable word. Since only seventeen units were used by the time of the last test, there were still several words on the test that had not been studied. This accounts for the fact that there were few near-perfect scores on the last 300 word test in either experimental or control groups. Scores in these tests have been reported as number of words out of 300 written correctly as they were dictated and used in sentences by their regular teacher under the supervision of the project director.

Another type of test was a standardized test, the spelling section of the *Standardized Differential Aptitude Test* of the Psychological Corporation. This test does not measure the students' ability to write a word correctly, but rather their ability to recognize printed words that are misspelled. Form A of this test was used both for the pretest in September and the final test in May. Scores for this test are reported in percentiles based on eighth-grade norms (not seventh-grade norms).

**RESULTS:** The final results contained in this part of the report are *F* scores of the analyses of covariance after intelligence and pretest achievement have been held constant.

Random Word Test I-III  
Gain from Pretest to End of First Semester

Experimental Group I (tape-taught, teacher in room)

Control Group I (teacher-taught, Westside Word List)

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F value = 7.13 in favor of Experimental Group I—significant at  
the one per cent level of confidence

Experimental Group II (tape-taught, teacher absent from room)

F value = 37.96 in favor of Experimental Group II—significant  
at the one per cent level of confidence

Experimental Group I (tape-taught, teacher in room)

F value = .74—not significant

Thus at the end of the first semester the gains of the tape-taught groups were significantly higher than the teacher-taught group, and there was no significant difference between the tape-taught group with teacher in the room, and the tape-taught group with teacher absent from the room.

Random Word Test I-IV  
Gain from Pretest to End of Year

Experimental Group I (tape-taught, teacher in room)

Control Group (tape-taught, teacher absent from room)

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Experimental Group II (tape-taught, teacher absent from room)

F value = 5.55 in favor of Experimental Group I—significant at  
the five per cent level of confidence

Control Group I (teacher-taught, Westside Word List)

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F value = 9.96 in favor of Experimental Group II—significant at  
the one per cent level of confidence

Experimental Group I (tape-taught, teacher in room)

Experimental Group II (tape-taught, teacher absent from room)

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F value = 2.51—not significant

Thus at the end of the year *both* the tape-taught (teacher in the room) and the tape-taught (teacher absent from the room) groups had more significant gains than the teacher-taught (Westside Word List) group, and there was no significant difference in gains between the tape-taught (teacher in room) group and the tape-taught (teacher absent from the room) group.

Again it must be remembered that the above tests, the Random Word Tests, measured pupils' ability to write correctly words dictated to them and given in a sentence.

Differential Aptitude Test—Form A  
Gain from September to May

Experimental Group I (tape-taught, teacher in room)

Control Group I (teacher-taught, Westside Word List)

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F value = .17—not significant

Experimental Group II (tape-taught, teacher absent from room)  
Control Group I (teacher-taught, Westside Word List)

F value = .77—not significant

Experimental Group I (tape-taught, teacher absent from room)  
Control Group II (teacher-taught, regular 7th- and 8th-grade texts)

F value = 2.85—not significant

Experimental Group II (tape-taught, teacher absent from room)  
Control Group II (teacher-taught, regular 7th- and 8th-grade texts)

F value = .77—not significant

Experimental Group I (tape-taught, teacher in room)  
Experimental Group II (tape-taught, teacher absent from room)

F value = .29—not significant

Control Group I (teacher-taught, Westside Word List)  
Control Group II (teacher-taught, regular 7th- and 8th-grade texts)

F value = 3.40—not significant

Thus there were no significant differences when tape-taught groups were compared with the two control groups individually, when compared with each other, and when the two control groups were compared with each other.

In conclusion it can be stated on the basis of the foregoing evidence that the tape method (which learns heavily on kinesthetic learning from writing and rewriting the word under differing situations) surpasses the teacher-taught method significantly when the criterion is number of words gained that can be written correctly. There is no significant difference between tape-taught groups and teacher-taught groups when the criterion is number of words gained that can be recognized in print as having been spelled incorrectly.

#### Subject Preferred Analysis

Besides these tests to measure gains in spelling, questionnaires were filled out by all the students in the seventh grade asking them to list their preferences for their different subjects with number 1 being the most liked subject, and number 10 being the least liked subject. In this way we were attempting to find out whether or not taped spelling lessons were liked as well as teacher-taught spelling lessons. The results of this preference test were as follows:

Experimental Group I  
Control Group I

F value = .13—not significant

Experimental Group II  
Control Group I

F value = .21—not significant

Thus, although one might from time to time hear students say that they especially liked the tape, or did not like it, it appears that from September up to February when these preference questionnaires were



filled out, students had developed no likes or dislikes for tape-taught spelling that were not developed in like measure for teacher-taught spelling.

#### EIGHTH-GRADE SPELLING

**DESIGN:** The eighth-grade spelling-by-tape experiment involved two groups as follows:

*Large Experimental Group*—Originally 110 students taught for twenty minutes daily by a student-operated recorder attached to three loudspeakers along one wall of the cafeteria.

1. The first half of the first-semester spelling was taught before a forty-minute mathematics class. The teacher who proctored the spelling class the first twenty minutes taught the mathematics class later without tapes. During the spelling, this teacher took no active part in the class other than to attend to the distribution and collection of materials.
2. In the second half of the first-semester, the mathematics class in a large group was discontinued due to the make-up situation following a flu epidemic. A new teacher took charge of the spelling and the spelling period was changed to the last twenty minutes of the school day.
3. In the second semester, the large group, which seemed restless under the new regime, was broken up into five groups which studied their spelling by tape under the direction of their regular language arts teachers. This continued throughout the second semester, but on a three-day-a-week basis.

*Control Group*—Twenty-eight students studied spelling under their regular language arts teacher. The same Westside Word List was used that was used in the Large Experimental Group.

One type of tests used to measure gain in spelling ability was three 300-random-word tests made up in the same manner as the tests in the seventh grade. The Westside Word List, however, was difficult, since one third of it was composed of *very* difficult words from high-school spelling books. The inclusion of the latter set of words was to keep the tests from being rendered insensitive due to a ceiling; however, even this device did not entirely eliminate this hazard as can be seen by noting how many in both groups achieved the 99th percentile in a standardized test given at the end of the year.

The random tests, as in the seventh grade, tested the pupils' ability to spell words when they were dictated to them and used in sentences.

A second type of test used was the *Standardized Differential Aptitude Test*. This was the same as used in the seventh grade. Again this tested the pupils' ability to find misspelled words in print.

It was the purpose of the eighth-grade spelling experiment to determine whether or not a very large group of students could be taught their spelling by means of a student-operated tape recorder with but one teacher in the room. Accordingly, at the first of the year a large class was assembled in the cafeteria for the study of spelling. The spelling class was followed by an experimental mathematics class (teacher-taught)



also meeting in the cafeteria. Because of circumstances resulting from extensive make-up work after an extreme influenza epidemic, the large mathematics class was discontinued. Up to this time, the discipline during the spelling class had been exceedingly good. The gains made by this group during this time when compared with the Control Group seem to be phenomenal. The pupils were very fond of their mathematics teacher. Evidently they were working for his good will in the spelling as well as in the mathematics class.

After the mathematics class was discontinued, a woman teacher was assigned to supervise the spelling. Now the group came into the cafeteria the *last twenty minutes* of the day. During this period some disciplinary problems arose, probably partly due to the fact that a woman teacher had taken the place of their well-liked mathematics teacher during the spelling period, or because spelling was now given during the last twenty minutes of the day, or because they were now becoming tired of the large group idea. After one month, the Westside Junior High School principal took over the supervision of the group and there were no longer disciplinary problems, but it was quite evident that several people were not doing their best. This is reflected in the fact that during this second half semester from Test II to Test III, although the Large Experimental Group seems still to exceed the gains of the Control Group, the F score was 3.58 (not significant) instead of the highly significant 113.09 made during the first half of the first semester.

When the students returned to their five respective classrooms, the taped spelling lessons were broadcast to the classrooms by a single recorder in the tape library. In this last phase of the experiment, the teachers were freed from actual teaching, but stayed in the classroom busy with other work. Students corrected most of their own work, or traded papers when so directed by the tape. At the end of each day's work, the teachers gathered the papers and surveyed the checking.

Three analyses involving dictation of words to be spelled correctly were made. They are known as Test I-Test II (the work of the first half of the first semester), Test II-Test III (the work of the second half of the first semester), and Test III-Test IV (the work of the second semester after the Large Experimental Group had been broken up into five small groups). During the second semester, spelling was given to both the Large Experimental and the Control Groups three times a week; so the amount of work covered from Test III-IV is the same as Test I-Test II, and Test II-Test III. Test III-IV is reported as small tape-taught Experimental Groups A, B, C, D, and E as compared with the teacher-taught Control Group.

The fourth analysis was made of the year's work of the Large Experimental Group (later broken into five groups the second semester) and the teacher-taught Control Group. Here gains throughout the entire year were measured by the same *Differential Aptitude Test* mentioned previously. This test was given at the beginning and at the end of the

year. Specifically, these analyses were made to answer the following questions:

1. How did the performance of the large tape-taught Experimental Group compare with that of the Control Group during the period when classes were held in the cafeteria just before the mathematics period and while it was being supervised by the well-liked mathematics teacher?

2. How did the performance of the Experimental Group compare with that of the Control Group during the period immediately following discontinuation of the mathematics class when the supervision was turned over first to a woman, who had them in no other class, and later to the principal of the junior high school, who was also well liked by them, but who had them in no other class?

3. How did the performance of the five Experimental Groups A, B, C, D, and E compare with that of the Control Group for the remainder of the year?

4. How did the entire tape-taught Experimental Group as a whole compare with the Control Group on a standardized test measuring ability gained throughout the year to recognize incorrect spelling in print?

RESULTS: The final results contained in this part of the report are F scores of the analysis of covariance after intelligence and pretest spelling achievements have been equalized.

#### Test I-II (Random Word Test)

Large Experimental Group (tape-taught)

Control Group (teacher-taught)

F value = 113.09 Significant at the one per cent level in favor of tape-taught Experimental Group

#### Test II-III (Random Word Test)

Large Experimental Group (tape-taught)

Control Group (teacher-taught)

F value = 3.58 Non-significant

#### Test III-IV (Random Word Test)

##### *Large Experimental Group versus Control Group*

Group A versus Control Group

F value = 30.73—Highly significant in favor of tape Group A at one per cent level of confidence

Group B versus Control Group

F value = 0.0—Non-significant

Group C versus Control Group

F value = 1.39—Non-significant (due to small number in Experimental Group)

Group D versus Control Group

F value = 2.76—Non-significant

Group E versus Control Group

F value = 2.01—Non-significant

## Differential Aptitude (Sept. 1957–May 1958)

Experimental tape-taught Group

Control teacher-taught Group

F value = .36–Non-significant

In summary it may be said that, during the first half of the first semester, the tape-taught Experimental Group excelled significantly the teacher-taught Control Group in ability to spell words correctly that were dictated to them and used in sentences.

During the second half of the first semester after their mathematics teacher was removed, the scores of the tape-taught group still seemed better than those of the teacher-taught Control Group but were not significantly so. Again this refers to ability to spell correctly a dictated word.

During the second semester after division into five groups, Group A of the tape-taught Experimental Group excelled the teacher-taught Control Group in a highly significant manner. There were, however, no significant differences between Group B and the Control Group, Group C and the Control Group, Group D and the Control Group, and Group E and the Control Group. This refers to ability to spell correctly a dictated word.

The standardized test given at the beginning and end of the year to measure gains in ability to recognize a misspelled word reveals no significant difference between the Experimental tape-taught Group and the teacher-taught Control Group; however, both the Experimental and Control Group (both of which used the Westside Word List) measure so high on the norms that the ceiling of the test was not high enough to measure the students' performance, and differentiation was not sensitive, although the tape-taught Group *did* make the greater gain. It may be noted here that of the 138 eighth-grade pupils using the Westside Word List, 24 ended the year in the ninety-ninth percentile based on eighth-grade norms of the *Differential Aptitude Test*. One reason for this was undoubtedly the selection of the words used for the year's Westside Word List. This was compiled by making up a master list of all words used in several eighth-grade lists, eliminating all above the 82% as given in Greene's New Spelling Scale (which eliminated too easy words) and including a large percentage of very difficult words normally studied in high school. An inspection of the word list in the Form A *Differential Aptitude Test* with the Westside Spelling Word List for Grade 8 showed that about seventy-five per cent of the words in the test had been studied, and that more would have been studied if the entire Westside Word List had been covered. Since at the end of the first semester the spelling had been put on a three-day-a-week basis, the entire list was not studied.

## SEVENTH-GRADE CONVERSATIONAL SPANISH

In the Conversational Spanish experiment in the seventh grade, six seventh-grade classes were taught by tape. At the beginning of the

year, their classroom teachers knew no Spanish, but learned along with their students. The tape provided materials and gave exact instruction, while the teacher provided the extra effort that was sometimes necessary to get the material learned. The control seventh-grade class was taught Spanish by their regular classroom teacher who was not a regular Spanish teacher, but had earned a college minor in the language. All students and teachers of Experimental and Control groups were provided at the first of the year with a skeleton manual of the vocabulary and phrases to be learned. Twenty minutes a day, five days a week, were devoted to class study by tape. Little homework was assigned, but it was repeatedly suggested that students have an older person (mother, father, older brother, or sister) learn Spanish along with them so that they could practice speaking Spanish outside of class.

**DESIGN:** The six tape-taught classes were grouped into three experimental groups for the *first* semester's analyses. Each experimental group (as in spelling) was composed of one high-scholastic-ability class, and one average-scholastic-ability class. The control or teacher-taught group was composed of a mixed-scholastic-ability class. For the end-of-the-year analyses, the three experimental subgroups were considered as one large group for comparison with the Control group.

At the end of the first semester, all classes were administered a written test measuring knowledge of vocabulary, phrases, and comprehension ability. This test covered the work of the entire first semester. The score on this test was designated as the criterion for the analysis of the results. Again the analysis of covariance, as in the spelling experiments, was used as the statistical technique for analyzing the data. Intelligence and initial spelling test scores were used as the two control variables.

At the end of the *second* semester, the scores of three Experimental groups were added together and made into one large experimental group. Two tests, devised with the assistance of the Department of Romance Languages of Nebraska University, were administered to all groups. The first was a written test. The second test was an individual test given to only a total of ten students from the Experimental divisions and ten students from the one Control group. Dr. Lloyd D. Teale, of Nebraska University, designated the twenty students to be chosen, endeavoring to pair up as nearly as possible students from the Control group and the Experimental groups that were nearly equal in sex, intelligence, and achievement in the first semester written Spanish test.

The questions on the oral test were first recorded on tape with sufficient time allowed between the questions for a student to give an unhurried oral response. Meanwhile a second recorder was running continuously taking down not only the original test, but the student's oral responses as well as any conversation that passed between the student and the person administering the test. As each student began his test and ended it, he repeated his code number—thus his name was not known. The tapes on which the tests were recorded were sent to the Department

of Romance Languages, University of Nebraska, and three experienced Spanish professors listened to the replies and filled out a rating scale for evaluating each response. The three ratings were then scored and each student was assigned the mean rating obtained from the three professors. The papers containing the ratings were then sorted according to Experimental and Control groups and the data prepared.

RESULTS: The final results contained in this part of the report are F scores of the analyses of covariance after intelligence and pretest spelling achievement scores have been held constant. (In last year's tests, a high degree of correlation was found between achievement in pretest spelling tests and final achievement in the written Spanish tests.)

#### First Semester Written Test

Experimental Group I (tape-taught by teacher who knew no Spanish)

Control Group (teacher-taught by teacher who knew Spanish)

F value = 1.58—not significant

Experimental Group II (tape-taught by teacher who knew no Spanish)

Control Group (teacher-taught by teacher who knew Spanish)

F value = 4.54—not significant

Experimental Group III (tape-taught by teacher who knew no Spanish)

Control Group (teacher-taught by teacher who knew Spanish)

F value = .414—not significant

#### Second Semester Written Test

Large Experimental Group (tape-taught by teachers who knew no Spanish)

Control Group (teacher-taught by teacher who knew Spanish)

F value = 2.80—not significant

#### Final Oral Test

Ten Students from Large Experimental Groups (tape-taught by teachers who knew no Spanish)

Ten Students from Control Group (teacher-taught by teacher who knew Spanish)

F value = .45—not significant

Thus it appears that in the first-semester written test, in the second-semester written test, and in the final oral test, there were no significant differences in the scores achieved by groups studying by tape whose teachers knew no Spanish, and the Control group which was taught by a Spanish teacher.

#### EIGHTH-GRADE SPANISH

The study of second-year Conversational Spanish in the eighth grade was not put on a statistical basis. Here the purpose of the study was to determine what would happen in the second year due to teacher and pupil turnover.



Westside, Omaha, Nebraska, teacher, who knew no Spanish at the beginning of the year, teaches Spanish to a second-year Spanish class.



Westside, Omaha, Nebraska, pupils try to answer questions on the board. Tape gives question, tape is stopped, pupil answers in Spanish, and tape gives correct answer. Teacher does not know Spanish.

The first three weeks were devoted to a thorough review of first year's work. The purpose was to give confidence to new students and to new teachers. A series of grade-school Spanish texts was selected. The materials in the first books were taught entirely by tape without texts; however, thirty of the fifth book in the *Juan y Maria* series were purchased. These books were used only during the class period; thus, one set of books was enough for several sections. They were passed around from class to class as needed.

The *previous* year, five seventh-grade groups had studied Conversational Spanish by tape. In four of the classes the teacher had known no Spanish but learned along with the students.

The *present* year began with four classes studying their Spanish again by tape. Following is a description of the four classes, and what happened to them:

*Group I* was composed of pupils of superior scholastical ability. Most of these pupils had been in the program the first year, but their teacher had not and began the year knowing no Spanish. This group, as a whole, did superior work the entire year; although at first the new students in the group (who had not had first-year Spanish) and the teacher (who had not had first-year Spanish) were at a distinct disadvantage.

*Group II* was composed of pupils of medium scholastical ability. Most of these pupils had been in the program the first year. Their teacher, also, had been in the program the previous year. These pupils did very well throughout the year. Both pupils and teacher seemed to enjoy second-year conversational Spanish. A comparison of test grades at the end of the first semester showed medium-high achievement.

*Group III* was composed of pupils of medium scholastical ability. One half of these pupils had not been in the program the previous year. The teacher, also, knew no Spanish at the beginning of the year. The final test at the end of the first semester showed that the achievements were hardly worth the twenty minutes a day being spent on Spanish; so this class was discontinued.

*Group IV* was composed of pupils of low scholastical ability. Over one half of the pupils in this group had had no Spanish the year before. Some of the pupils, who had been in the program the year before, had disliked it. The teacher knew no Spanish and disliked being responsible for running a tape recorder. In this class a review of first-year tapes was used. This class not only achieved very little during the first semester, but also became a discipline problem. The second semester the Spanish was discontinued.

At the beginning of the second semester *Group V* which had been in the program the first year, but not the first semester of the second year, began the second year's work. Their teacher was the same teacher used for *Group IV* who had claimed she had difficulty with any mechanical device. This group had medium-high scholastical ability. Since their



teacher disliked using a recorder, the program was piped in through two loud speakers from the tape room where a tape recorder was operated by a Spanish teacher. This procedure seemed entirely satisfactory. Both pupils and teacher said they liked the arrangement. An attempt was made to use a PA system arrangement that would allow the Spanish teacher operating the tape in the tape library to listen in on the class. Due to mechanical difficulties—the installation of a unit that was not heavy enough to do the job—the Spanish teacher in the tape library was never able to hear without strain what was being said in the classroom. A PA system with less than an output of 5 watts per room should not have been used.

From the above study it appears that a second year by tape in the eighth grade is feasible if most of the pupils have been in the program the first year, under the following conditions:

1. The class has high scholastic ability and the teacher has been in the program previously.
2. The class has medium scholastical ability and the teacher has been in the program previously.
3. The class has high scholastical ability and the teacher knows no Spanish and is new to the program.

Apparently a second year is not feasible if the class is of medium or low ability and the teacher knows no Spanish or has not been in the program previously.

The consensus was that although most of the pupils in Group I, II, and III seemed to enjoy their Spanish, many were of such caliber and intellectual ability that, instead of taking the second year of Conversational Spanish by tape, they might well have been doing regular first-year high-school Spanish, thus being ready to go on with regular second-year work upon entering high school. It might be possible to give high-school credit toward graduation for this work performed in the eighth grade.

#### LANGUAGE LABORATORY

During the second semester of the 1957-1958 school year, a brief experiment was carried out regarding the desirability of conducting a language laboratory for French and Spanish students. More difficulty than had been anticipated was encountered in working out a smooth formula for the laboratory and in finding the needed tests. In final form, the experiment involved asking the students enrolled in the courses if they cared to volunteer for a laboratory in which tapes would be used to enhance their comprehension of the language. They were to attend the laboratory during one of their study halls each week, and were to work under very little, if any, supervision.

A few in both courses who started the experiment, dropped out because they felt they could not give up their study hall regularly. Those remaining in the Experimental Groups at the end of the experiment were:



seven in French I, four in French II, fourteen in Spanish I, and six in Spanish II.

Due to an accident which occurred to the Spanish scores when they were taken from the office for correction, only the French scores could be analyzed. Because of the short duration of this experiment (five weeks), and the small numbers involved, it is suggested that these results be interpreted as indications of the desirability of further research in this area.

These students and the students in the Control Groups were administered a pretest, *French Listening Comprehension Test*, Form A; and a post test, *French Listening Comprehension Test*, Form B, from the Educational Testing Service of Los Angeles, California.

RESULTS: These results are F scores of the analyses of covariance after intelligence and pretest achievement have been held constant.

#### French I

##### Gain from Pretest to Final Test

Experimental Group (one period of laboratory per week for five weeks)

Control Group (no laboratory)

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F value = .17 not significant

#### French II

##### Gain from Pretest to Final Test

Experimental Group (one period of laboratory per week for five weeks)

Control Group (no laboratory)

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F value = 78.60 in favor of Experimental Group—neither significance  
nor level of confidence given in the  
statistical report from Nebraska University

#### CONCLUSIONS

The results of the analysis of the 1957-58 Westside Tape Teaching Experiment are the basis for the following conclusions:

##### *Spelling—Seventh- and Eighth-Grade Level*

1. Students can learn to spell as effectively when taught with the use of tapes as when taught by conventional classroom procedures.
2. The use of tapes for teaching spelling has no adverse effect upon the preference which students display for the subject.
3. When tapes are used in the teaching of spelling, the teacher is free to concern herself with matters other than the presentation of the subject matter to the group as a whole. Additional assistance is thereby available for slow learners and remedial cases.
4. Large groups of students can be taught at one time under the supervision of one teacher when tapes are used for the teaching of spelling. It is essential, however, that appropriate orientation to this procedure be provided for the students.

5. The use of tapes results in little or no advantage over conventional classroom procedures in teaching students to differentiate between correctly and incorrectly spelled words.

### *Language—Seventh-Grade Level*

Tapes can be used effectively in the teaching of Conversational Spanish. This effectiveness applies to both oral and written aspects of the language.

### *Language—Secondary Level*

Additional research is desirable to ascertain the effectiveness of laboratory experiences involving the use of tapes for teaching French and Spanish.

### COSTS

The following list of materials is desirable for a good tape program that covers several courses. All of the items, however, do not need to be purchased the first year. Most of the items can be purchased at much less than retail price depending upon prevalent school discounts, quantity ordered, etc. The prices are what we paid for same *per each*.

Tape Recorders (at least 2 to allow copying) \$120.00 – \$175.00  
15 to 20 Rolls of Long-play Tape per course – 1800 Ft. 3.00

#### Office Supplies

Master Mimeograph Sheets	3.50
Master Ditto Sheets	2.65
Empty Reels 3"	.17
Empty Reels 5"	.33
Empty Reels 7"	.48
Leader Tapes (for labeling tapes)	1.25
Splicing Tape (for repairs)	1.25
Adhesive Labels (for labeling reels)	2.50
Gummed Paper (for labeling boxes)	3.50
Scotch Tape (for putting over gummed paper labels)	2.00

Distribution Box 5.00

(for allowing the making of more than one copy at once)

Distribution Boxes for Language Laboratory Work 7.50

(Provide one for every four students to be working at one time.)

Earphones—single 6.50

(Provide one for every student to be working in the Languages Laboratory at one time.)

Sound Mixer 15.00

(This is used mostly by the music department in dubbing in materials over previously made tapes without erasing the first tape.)

Bulk Magnet Eraser 21.00

(This is desirable when one wishes to reuse old tapes with new material where the machine will be playing blank tape over long stretches. In making

the new tape, much time can be saved by using the fast rewind or fast ahead speeds if one is sure the tape has been completely cleaned.)	
Loud Speakers (2 per room for large rooms)	10.00
Wiring 2 Loud Speakers per Room into a Central Tape Room—Labor and Materials for 3 Rooms (short run of wire—not including loud speakers)	80.00
Wiring of Large Room for Large Group Teaching (includes three loud speakers, wiring, and labor) (when project becomes too large for hand copying—	98.00
Commercial Copying 1800-foot reels recorded on both sides in quantities of 10)	3.10
Intercommunication Unit (used only in centralized teaching where it is desirable to listen in to the various classes, ask questions, <i>etc.</i> )	150.00 and up
Repairs per machine per year	8.75

#### SAVINGS

The amount of savings in use of trained personnel, larger groupings, fewer textbooks, *etc.* varies according to the subject being taught, the method of using the recorder, *etc.*

Instead of teaching five classes of thirty pupils each day, the language teacher, as a supervisor of taped language lessons, can attend to keeping a large number of teachers (who know no Spanish) supplied with materials that will enable them to teach effectively in spite of their original ignorance of the language. To get the best results, the Spanish teacher should visit these rooms not less than once every three weeks. This will somewhat mitigate the "canned" effect of the tapes and give the students an opportunity to ask questions which their own teacher may not be able to answer. It will also allow for occasional "checking up" on the students' pronunciation. The maximum number of rooms that a supervisor of this type can handle is not yet known. At present, one Spanish teacher is in charge of the supervision of twenty junior high-school classes and still has time to teach two regular high-school classes, do repair work on tapes, make new tapes, and attend to copying.

Large group teaching seems to have been effective in our experiment. There are two choices: to teach a large number of pupils in one room at the same time, with possible discipline problems; or to teach them in their separate rooms (not necessarily all at the same time) through one recorder which is wired into the various rooms. One recorder with an output of ten watts can supply three large rooms at a time. With an amplifier, this can be increased to an indefinite number of rooms. Up to the present, this latter method has presented no discipline problems of any kind.

In Conversational Spanish (seventh grade), the entire cost of textbooks is saved by the mimeographing of a skeleton manual of the materials to be learned. Twenty pages printed on both sides will suffice. Some pupils want to buy extra copies for home use. These booklets are sold to them at thirty-five cents each.

Explanations usually given in textbooks are not needed as these explanations are on the tape. In eighth-grade Conversational Spanish, easy Spanish readers are desirable after the first three weeks' review. Since these books are used only when the tape is used during class period, one set can be moved from class to class as needed.

In spelling both in the seventh and the eighth grades, the entire cost of textbooks is saved. A mimeographed booklet of the words for the year takes five pages for each pupil in the seventh grade and six pages in the eighth grade. These are supplied by the school. Some pupils want copies for home study. These are sold to them, as needed, for ten cents each.

Fifteen to twenty rolls of 1800-foot tape are needed for each year's Spanish course. We are putting one complete set in each school building. The teachers start the course at two-week intervals in the fall; thus, several teachers can use the same set, but at different times.

Although it is desirable to have one tape recorder for every two teachers who plan to use it for two or three subjects every day, last year often we had as many as four teachers to a single recorder. There should be at least one stand-by recorder in each school system, since it is necessary to retire a machine from time to time for repairs. The repair bill for last year averaged \$8.75 per machine. Age of machine, make, etc. will cause this amount to vary.

#### ADVANTAGES IN TAPE TEACHING

1. There is a possible entire saving in the purchase of textbooks in some fields. Mimeographed skeleton booklets of course summaries may be substituted.

2. In some fields, such as typing, the number of pupils per class may be increased. In spite of larger numbers (with the tape giving directions and timing tests), the teacher still has more time for individual supervision and instruction.

3. Classes may be doubled and tripled in some fields—but with possible disciplinary problems unless the one teacher in charge is a strong disciplinarian.

4. A smaller number of special supervisors may be needed in some fields such as music where tape recordings played by the classroom teacher can cut down on the number of visits necessary.

5. There can be twenty-minute rest or relaxation periods for the teacher while certain self-teaching subjects such as the spelling are in progress; or this saved time can be used for bulletin board work, leaving the room for ditto work, conferences with parents by telephone from

the main office, or for individual work with retarded pupils who should not be attempting work of that grade level.

6. Some subjects such as Conversational Spanish may be taught through untrained teachers with the tapes supplying the material and the teachers seeing that the material is learned. Other subjects such as spelling can be taught entirely by the tape with teachers confining their work to checking daily for neatness, and final grading of unit tests.

7. Provision may be made for the accelerated student who is bored with ordinary classroom procedure. So far, only emotionally mature seniors have been used in the experiments now being conducted at Creighton Prep School, Omaha, Nebraska. It is believed that a small window between the regular classroom and the room where these students will work without a teacher may solve the problem of the *brilliant student* who is still *emotionally immature* and inclined to "horse around."

8. Tapes in classes of normal size seem to result in better discipline. Pupils say they like to "run the spelling class themselves." They try to conduct themselves in such a way as to avoid losing that privilege. Since the tape goes on relentlessly, and most of the students want to hear what is being said, the "show off" loses his audience. If necessary, the teacher can reprimand such an individual by removing him to the hall for a private lecture. Meanwhile the tape goes on, and the pupils don't realize what is happening to the offender. Also, classes move faster because of good discipline and fewer unnecessary questions. The pupils learn to listen attentively because the material will not be repeated, and they learn to save their questions until the tape has been turned off.

#### PROBLEMS

In spite of the effectiveness and advantages of tapes, there are certain problems connected with their manufacture and use that must be faced:

1. There are very few tapes on the market at present geared to taking over a complete teaching job. Most of the tapes are of the visual aid type—for enrichment only.

2. Many teachers dislike making tapes.

a. Slight imperfections of pronunciation and grammar, or voices that are not pleasing are very noticeable. Speech training for teachers who make tapes is highly desirable.

b. Pupils are very intolerant of imperfect tapes. They are conditioned to near perfection in radio and television.

c. It takes at least ten hours to make a 1800-foot tape recorder on both sides, even with the material well in hand and a rough draft of the script before one. It is easy to make corrections when errors are detected immediately, but it is very difficult to erase and replace with material of equal length once the tape has been made. When the tape has been recorded on one side only, this can be accomplished by cutting out unwanted material and splicing in new.

- d. It is impossible to record script at school unless there is a sound-proof room at hand. The recorder must usually be carried home, and the recording must be made after the usual daytime noises have subsided. As an example, a gas lawn mower at work a block from the place of recording, although all windows and doors are shut, will usually interfere with the making of a tape. This means that much of the recording must be done late at night.
  - e. Since the moving personality of the teacher is lacking on the tape, this must be compensated for by monitors who write on the board, collect papers, *etc.* at the bidding of the tape. Every psychological device possible must be called upon to maintain interest.
  - f. Many teachers, enthusiastic about the possibilities of tape, fail in their first attempts because they try to put on the tapes flat, lecture type material. Materials must be dramatic or call for definite student responses from time to time either in writing, movement, or oral recitations.
  - g. The teachers who can make the best use of tapes are those who have several classes every day, and those teachers who wish to impart subject material in which they are untrained. Teachers who have several different classes a day claim that the time it takes to make tapes far surpasses the time it would take for daily preparations. It is true that they might be able to use the tapes the next year, but they say they are not at all sure they will be teaching the same subject then.
3. Where large grouping is used, provision must be made for proper seating, hearing, and seeing. A certain amount of money should be budgeted for clerical help in correcting papers. What to do about absences and make-up work is still a problem. Theoretically, it is possible for students to come in after school and run the lesson on the recorder. Where many of the pupils ride the bus, this does not work out well in practice.
4. When the same tape pattern is repeated from day to day, it becomes boring. Ways of slightly varying the tape must be devised. Adding soft music during work intervals on the tape is one way of adding variety.
5. Tapes must be carefully labeled, and some indication of the material on the tape should be put on the box. Best of all, a skeleton manual of the contents should accompany the tapes.
6. In copying from one machine to another, controls and wiring must be carefully watched or the copies will show electrical disturbances, poor volume, *etc.* Also someone must be on hand to stop the copying machines the second the reels are finished or they will spin freely, often catching up ends of the tape and throwing them back into the machine. This results in loss of time in cleaning the machine and loss

of the tape. When this happens to a master tape, valuable material may be lost.

7. Too sudden stopping and starting of a machine may tangle the tape around the core of the reel. Often the tape is ruined.

8. Some measures must be planned to take the place of the tapes on the days when the recorder must be sent out for repairs. We averaged one repair per machine per semester.

9. Tapes must be carefully stored for the summer away from excessive heat and moisture. Our tapes are boxed up and moved to an air conditioned office each year.

10. On ordinary machines, copying can be done no faster than at the 7.5 speed. There is a professional copying machine that sells for \$1500 which copies at 15.0, and a much faster machine that sells for \$8,000.

11. Even with greatest of care, locally made tapes will not have a finished, professional quality until they have been taken to a recording studio and put on an equalizing machine that adjusts volume, and are carefully edited for breath marks and foreign noises. The charge for this service is \$10.50 per hour.

#### PLANS FOR THE FUTURE

Westside Junior and Senior High Schools are grateful to the Fund for the Advancement of Education, to the Commission on the Utilization of the Staff in the Secondary School of the National Association of Secondary-School Principals, and to its Field Director, Dr. J. Lloyd Trump, for the assistance which has enabled us to carry on the two-year Experiment in the Use of Tapes.

The high schools are also grateful to our Board of Education which has provided the extra funds needed for this last year's experimentation.

This year the two high schools are continuing certain phases of these experiments, and are putting into standard practice those phases which they have deemed worthy of immediate adoption. The seventh-grade Spelling Experiments seemed to be successful when the gains of the tape-taught *groups* were compared with those of the teacher-taught *groups*. But we feel that even more can be accomplished if an easier word list is developed for those of very low initial ability, if the average and above-average are taught by tape, and a word list of higher grade level is added for the above average.

To this end we are signaling out one seventh-grade class of high ability, and one of average ability for continued experimentation along this line. The remaining seventh grades will be used for the Control groups. Also, we wish to try out some variations that may increase the popularity of the taped spelling lessons.

The community has been well pleased with the results of the Spanish-tape experiment. Last year, we experimented with the language tapes. We found that first-grade pupils could not keep their attention focused



long enough to make the machine teaching worth while. But a fourth grade group of unusual ability did excellent work, although the tapes they used were the regular seventh-grade ones.

The board of education has decided to put the Spanish through the seven elementary schools, starting with the third grade through the sixth grade, and to continue the tape program as it is in the seventh grade. This year a Spanish teacher has been employed whose sole function will be to start the Spanish in the third grades. Next year, the program will be carried up into the fourth grade. In the third grade, only songs will be taped. More and more tape programs will be added in the upper grades until a full tape program is reached at the junior high-school level. This year, in addition to the time saved by using tape, the teacher who will be supervising the taped lessons in grades six and seven will have time to teach two full-time high-school language classes, and run the tape library. Visits will be made every two or three weeks to those rooms studying by tape for the purpose of helping new teachers and answering pupils' questions.

In the eighth grade, instead of continuing with the tape as we did last year, we are offering regular high-school Spanish as an elective for eighth-grade pupils who did well in last year's seventh-grade Spanish-by-Tape program; thus, they will be doing regular second-year high-school work as freshmen, and third-year work as sophomores. We hope that grade-school conversational Spanish plus *three* years of high-school Spanish will become the rule for those showing language aptitude.

The eighth-grade spelling experiment will be discontinued this year until our seventh-grade Spelling by Tape on Three Levels of Instruction has proved itself. Rene Hlavac, who supervised the large group, still believes that the large group idea *will* work without discipline problems if the proper physical conditions exist and the program is offered at the proper time of day. This experiment should be undertaken again, if not by Westside High School, then by some other school system.

In the Senior High School, a tape recorder has been allocated to the typing department. Meanwhile the tape library, servicing the history, home economics, music, and English departments is growing. Pupils and teachers are contributing materials they have picked up with their own recorders, and many programs are being secured through the University Audio-Visual Departments.

Eight more tape recorders were bought this year. We now have twenty-five tape recorders for a school population of 4,405 pupils. The saturation point has not been reached. Some of the teachers in the grades are buying their own recorders.

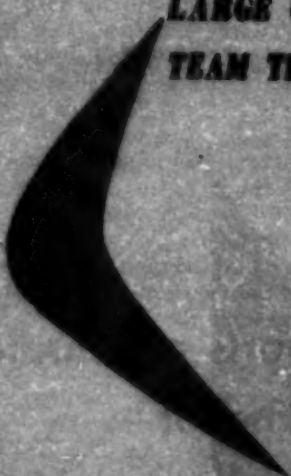
A new junior high school is in the planning stage. It will install permanent wiring and needed apparatus to facilitate teaching by tape in those areas where the tape is proving itself worth while.

Again we wish to thank those who have helped us get a start in Teaching by Tape.



### ***Part III***

## **Follow-Up Reports on Studies Completed at End of 1956-57 School Year**



## **LARGE GROUP INSTRUCTION TEAM TEACHING**

- RELATING CLASS SIZE  
TO INSTRUCTION
- BETTER TEACHER  
UTILIZATION
- CLOSER WORKING  
RELATIONSHIPS
- STUDENT GROWTH

One of the charts prepared early in the program to explain the types of instruction under the Syosset, New York, study. These charts were used as visual aids, with the curriculum coordinator explaining and developing the points listed.

## **Evanston, Illinois, Township High School Expands Use of Closed-Circuit Television in 1957-58**

WANDA B. MITCHELL

**A**N EVALUATION of the 1956-57 experiment in the use of closed-circuit television at Evanston Township High School, resulted in these tentative conclusions:

1. In certain subject matter areas, one teacher with the aid of closed-circuit television may instruct effectively two or more classes simultaneously.
2. Closed-circuit television can be used effectively as a visual aid in magnifying experiments in a science laboratory.
3. Closed-circuit television can assist teachers in using their time and abilities more effectively through the team approach.
4. Closed-circuit television is an effective tool for the in-service training of teachers.
5. High-school students can operate vadicon camera equipment satisfactorily.

Since our experiment in the teaching of multiple classes of typing and English-Speech had been fairly conclusive in establishing the validity of the first of these conclusions, we decided to continue our investigations in other areas for the 1957-58 school year. The following list of activities indicates the wide variety of uses we attempted during the year:

### **FILMS AND KINESCOPES**

We continued to distribute films to classrooms *via* closed-circuit television. Thus, one projector, one experienced operator, and one film could serve thirty or more classrooms simultaneously, with no interruption in the class routine. The viewing of the White physics films on a television set was discontinued because the 21" screen proved too small for the clear viewing of formulae.

Four experimental kinescopes (films made from television pictures) were made to be used during the 1958-59 school year. The first of these was a series of orientation lessons prepared by one of our school librarians to introduce freshmen to the facilities and routine of our

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school library. In the past, we have closed our school library for the first two weeks of classes to permit each freshman English teacher to bring her class for instruction. This year we presented this instruction simultaneously to all classes *via* the kinescopes on closed-circuit television.

Last year one of our social studies teachers, who is especially effective in teaching the geography of critical areas of the world, made a series of kinescopes on the geography of Russia. During the 1958-59 school year, any social studies teacher who wishes to have the assistance of this instructor's lectures, may show these kinescopes in his classroom.

Two other kinescopes were prepared for use this year: one, the instructions for a standardized test and, secondly, a student demonstration of pupil-teacher planning in the core studies program. The latter was intended for showing to PTA groups to acquaint them with the techniques and methods of this type of study; however, the technical quality of this kinescope was so poor that it will not be used. The staff members working on the kinescope projects, learned that while kinescopes are much cheaper than regular films, technical skill is essential for satisfactory results, especially with the industrial type equipment used by our school.

#### TEAM TEACHING

In two courses we experimented with the use of television to enable teams of teachers to share their special skills, and thus give students the advantage of the best of several teachers' abilities. In Speech Arts Survey, a course for freshmen, four teachers with special interests, planned their lessons together. The teacher who was most skilled in stagecraft gave the instruction on that unit to all four classes *via* television while the other three teachers supervised the classroom activity related to this study. The teacher who was best qualified to teach make-up used television to demonstrate to all classes how to apply various types of stage make-up while the other three teachers supervised the classroom laboratory as students attempted to follow the televised instructions. This team approach required much additional time for joint planning sessions, but it did give the instructors the opportunity to teach the areas in which they felt most competent. The participating teachers were aware of the difficulties that would arise if the team of teachers did not agree on fundamental philosophy. Their differences in methods and techniques enriched the experience of the students, but differences in philosophy or in fundamental principles would have brought chaos and confusion to a group of freshmen.

A similar technique was used in a senior English project, employing extensive use of audio-visual aids, one of which was television. In this project, four classes sometimes met together with one teacher presenting instruction common to all. On these occasions, three teachers were freed to plan their work. For certain units, the instruction was pre-

sented *via* television to all four class groups, with the follow-up and discussion in the individual classrooms geared to the abilities of the separate groups. On other days, students reported to skills laboratories to which they were assigned for special help in reading, writing, or speaking.

#### TOTAL INSTRUCTION

Experimentation continued in teaching Senior Beginning Typing entirely by television. During the 1956-57 year, the supervisor in the viewing room was a member of the school's secretarial staff. Her responsibility in the classroom was to check attendance, collect papers, and supervise the conduct of the students who received their instructions *via* television. Students' questions were referred to the instructor in the originating room by means of a talk-back system.

One change was made as this program continued during the 1957-58 school year. The secretary-supervisor was replaced by a beginning teacher, who had the advantage of observing the head of the department as he taught the classes she would be expected to teach later. She answered students' questions and was responsible for all the classroom duties, except the actual presentation of instruction. The teachers involved in this set-up felt that it was an effective way to orient new teachers.

#### NON-CLASSROOM ACTIVITY

The use of closed-circuit television as a public address system proved to be especially helpful because of our unique set-up with twelve home rooms, each having about 250 students. In previous years, any publicity stunts, any special programs or student council speeches, required five or six days to permit the performance to visit each of these rooms. This year, these activities were telecast from the studio to all the home rooms simultaneously. A music program was telecast from the music wing to all the home rooms; a skit advertising the school play was tuned in by all home rooms on the same morning; our college counselor addressed seniors in five home rooms simultaneously; the entire student body saw close-up shots of the faces of the candidates for council offices. In each of these instances, an activity was presented once rather than twelve times. Those participating in these projects felt that the procedure improved the quality of presentation and saved much time.

Our closed-circuit television equipment was also used to provide in-service training for a group of our teacher-counselors. By means of remotely controlled cameras, a group of teachers could observe the techniques of a college professor as he worked with students who had emotional problems. Close-up shots of the student's face made it possible for the teachers to study student reaction in a manner which would have been impossible if they had actually been present in the room with the professor and the students. The teachers involved in this project

and visitors who observed the experiment felt that a similar set-up could improve our supervision of student teachers and add much to the practical value of courses in classroom procedures.

#### TECHNICAL ASSISTANCE

During the 1957-58 year, the school continued to employ the services of one television engineer. Not only were his services valuable in preventing technical break-downs of equipment, but also helpful in the maintenance and operation of all audio-visual and public address equipment.

Students continued to operate the cameras for all telecasts. After a three-week workshop of training during the summer session, they served as cameramen for one study period daily. The completion of the workshop course (which included a two-hour laboratory six days a week) and service as a cameraman for one period daily for two semesters, qualified the student to receive  $\frac{1}{2}$  unit of credit toward graduation.

#### PROJECTED USES

The staff is now exploring the effectiveness of closed-circuit television in new areas of our school's curriculum. The reorganization of our home rooms into four small schools of approximately 800 students each, offers the possibility of using television to unite the various home rooms in a division by providing uniformity where uniformity is desirable. Programs or activities in any one room can thus be shared by the entire division. Specialists available in any one home room can thus be made available to the entire division.

Our school auditorium seats only half the student body. Certain programs or parts of programs could be viewed in individual home rooms according to the special interests of those students.

The art department and the homemaking department are planning specific projects in which they will use the vidicon camera as a magnifying device. The homemaking department plans to use closed-circuit television to observe nursery school children during their family living unit.

Representatives from English, social studies, mathematics, and science are now studying the most effective way to enrich their courses by making available to all classes the special skills and abilities of certain superior teachers. These projects will be limited to specific units, in order that they may be continued or eliminated according to their value.

From this cursory survey, it is obvious that Evanston Township High School is continuing to explore the possibilities of educational television as a means of utilizing its staff in the most effective manner and enriching the students' learning experience to the most rewarding degree.

## **School Bus Drivers as Teacher Assistants in Driver Education—A Re-Check of the Effect on Driver Attitudes**

CLARENCE A. BROCK  
WALTER H. JARECKE  
ROY W. WALTER

THE January 1958 BULLETIN of the National Association of Secondary-School Principals (pages 57-68) reported an experimental study conducted in Richwood and Webster Springs High Schools in West Virginia. The experiment was sponsored by the Commission on the Experimental Study of the Utilization of the Staff in the Secondary School. The study was an effort to discover the effect of using qualified school bus drivers as assistants to certificated driver education teachers in high-school driver education programs. The specific problem was to ascertain whether students taught by both a teacher and a bus driver as a laboratory assistant in the behind-the-wheel phase of the program would receive knowledge, skills, and attitudes as well or better than those offered by a driver education teacher doing the job alone.

### **RESULTS OF THE 1956-1957 STUDY**

Using equated groups in comparable high school and community situations with the experimental factor being the school bus driver as the laboratory assistant, the experiment was conducted during the school year of 1956-57 and the following conclusions were drawn from the data collected:

1. The Experimental Group (using the bus driver) gained more in the area of driving skills than the Control group.
2. There was no significant difference between the two groups in knowledge gained.
3. The Control Group made a significantly greater gain in driver attitudes than the Experimental group.

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The team involved in the study was faced with the responsibility of making a recommendation to the West Virginia State Board of Education, since this body had given temporary permission for this exceptional type of instruction to be conducted on an experimental basis. Because the results of the one-year experiment did not indicate that driver attitudes could be taught better, or even as well, using the laboratory assistant rather than the certificated teacher working alone, it was unwilling to recommend that the policy be made permanent. It was decided that the attitudes area be checked further before any recommendation was made. It was felt that this part of the study ought to be tested with a larger number of students from several schools.

#### THE STUDY IN 1957-1958

Experimental classes were organized in Hinton, Sandstone, and Summersville High Schools, including a total of 97 boys and 115 girls. Weston, Clay, and Calhoun High Schools were used as Control groups with a total of 67 boys and 106 girls. That is, the four experimental schools were set up with school bus drivers as assistants in the behind-the-wheel phase of driver education and the attitude change in the students involved in these driver education programs was checked against the students in comparable schools using the traditional plan of a certificated teacher conducting both the classroom and laboratory behind-the-wheel phases.

The Driver Reaction Inventory, the same instrument used in the original experiment, was administered at the start of the semester and repeated at the close of the school year. The testing was done by two members of the State Department of Education, Roy W. Walter, Director of Transportation and Clarence Brock, Supervisor of Secondary Schools. The statistical treatment and resulting conclusions were made by Dr. Walter Jarecke, Director of Guidance at West Virginia University.

The table on the following page gives the means, standard deviations, and ratios of the different groups.

#### CONCLUSIONS

The comparison of these groups indicates that there was no statistically significant difference in the attitude toward driving between boys and girls in the Control Group or between boys and girls in the Experimental Group. There was no statistically significant difference between the cross comparison of boys and girls in the Experimental and Control Groups. The only statistically significant difference was between the boys of the Experimental Group and the boys in the Control Groups. The attitude of the boys in the Experimental Group was statistically better. The significance was at the 5 per cent level. When the boys and girls were combined in the Control Group and in the Experimental Group, the Experimental Group mean was higher, but the difference was not statistically significant.



<i>Group</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Number</i>
1. Control Male	135.55	13.34	67
2. Control Female	136.78	14.98	106
3. Experimental Male	139.68	17.31	97
4. Experimental Female	138.11	16.60	115
5. Group 1 and 2	136.31	14.38	173
6. Group 3 and 4	138.83	16.95	212

<i>Coefficient of Correlation</i>						
<i>Groups</i>	1	2	3	4	5	6
1		.564	1.73*	1.17		
2	.564		1.27	.627		
3	1.73*	1.27		.670		
4	1.17	.627	.670			
5						1.59
6					1.59	

\* Significant at 5% level

The implication of this study indicates that it does not matter whether a bus driver is used as an assistant or not as far as students' attitude toward driving is concerned. Students who were in a program where bus drivers were used had as good an attitude as those who did not have bus drivers to give them training in the "behind-the-wheel" phase of their program.

These data and the resulting implications will now be compared to the results of the original experiment. A representative group of school administrators, driver education teachers, and other educators will be organized to study the problem in the light of the results on hand and then agree on a recommendation to the State Board of Education that will lead to a permanent policy governing the use of school bus drivers as laboratory assistants to certificated driver education teachers.



Guidance committee studies permanent record materials in preparation for next meeting with consultant from Northern Illinois University.

***Part IV***

**Studies Continuing in 1958-59**



Tachistoscope proves worth while in improving reading speed of students at the Beecher (Illinois) High School.



Shorthand teacher at Beecher (Illinois) High School finds time and place (despite crowded classroom) to prepare other lessons as students take dictation from a tape prepared last year.

## **A Small School in Beecher, Illinois, Makes Big Strides**

JOHN FRENCH  
MELVIN DONAHO  
EDITH GROTBORG

**F**IFTEEN teachers of the Beecher Community Unit High School, along with their principal, Alfred Pirtle, and consultant Dr. Edith Grotberg, gathered around the tables in the library late in August 1957. Their purpose was to review what they had accomplished during the first year of the experimental study. The study was concerned with various ways to improve staff utilization in a small high school. Although this study, initiated the previous year under sponsorship of the Commission, had proved exhausting at times, it had also proved highly interesting. The faculty was enthusiastic as it looked forward to another year of participation in the experimental program.

The second year of the program found the staff more confident as to methods of organizing and evaluating studies. During the first year, the teachers realized they were quite inexperienced in experimental procedure. They asked for help, but there was considerable difficulty in securing consultants. This was due partially to the fact that consultant help was not available because of other commitments. But, in some cases, there was a lack of enthusiasm among college people in the field of education to associate themselves closely with a small school program, even on an experimental basis.

### **CONSULTANT HELP ESSENTIAL**

Highly satisfactory consultants were secured late in the first year of the program. These were people from neighboring teacher training institutions who were interested in being part of an experimental program and felt qualified to work with the Beecher faculty. The consultants recognized some of the problems unique to the small school and were challenged to make a contribution to the improvement of staff utilization in such a school.

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John French is Superintendent of Schools, Community Unit District, 200-U, Beecher, Illinois; Melvin Donaho is an English teacher at Beecher High School, Beecher, Illinois; and Edith Grotberg is Assistant Professor of Education at Northern Illinois University, DeKalb, Illinois.

A practical problem arose the second year in respect to consultant help, however. The consultant assisting with the library phase of the program changed positions. This change required her moving to another state which meant that she could no longer help at Beecher. Many schools trying to improve their instruction through the use of consultants will very likely face a similar problem. The library experiment was temporarily halted. Late in the fall, another library consultant was found, one who will be with the program until the end of the study this year. As a result of the late start and revisions made by the new consultant, no objective evaluation was made at the end of the school year. However, the general feeling among the teachers was that the over-all library program was moving in the right direction. They did not wish to return to the former library procedure, common to many small schools, of naming a member of the faculty as a librarian under a temporary approval. They saw the value of obtaining specific help from a certificated librarian and in-service training for the non-certificated librarian.

In passing, it is interesting to note that the library phase of the work made an unexpected contribution. It added another much needed teacher to our profession. The person selected to be the uncertificated librarian is now certificated.

#### INTEREST REMAINS HIGH

Despite the fact that the experimental program often created more work for the teachers and caused them to become engaged in a type of activity for which only a few had any kind of training or experience, enthusiasm for the program remained high during most of the year. There were occasional lapses of interest. Perhaps the most noticeable one occurred during the months of January and February of 1958. The board of education and the administration provided for extra secretarial help to relieve the teachers of considerable clerical work. This relief, plus additional time allotted for faculty meetings—an extra period a week—freed the teachers sufficiently to analyze their waning interest and to revitalize their experimental efforts. It was after this revitalization period that the most productive work of the year was accomplished. The community survey, the special reading classes, and plans for a reading clinic were all made in the spring.

The faculty had the full cooperation and support of the board of education and the administration. Teachers attended special conferences and institutes and were given extra time to develop their experiments. This kind of support, plus awareness that they were working on an experimental program receiving some recognition from other schools in various parts of the country, was highly motivating.

As small school projects developed in other states and inquiries came into the Beecher High School concerning its procedures, each teacher realized that he was contributing something to educational thinking

beyond the four walls of his classroom. One result of this recognition has been the effect upon tenure of the teachers.

#### TEACHERS STAY AT BEECHER

Only four teachers have left the school in the past two years—none to go to another school! Three of these departures were because of the military draft and, in the other instance, the teacher left to enter dental school. The experimental program was not inaugurated to hold teachers. As a matter of fact, one of the purposes of the program was to learn what caused teachers to stay or leave. Apparently, one factor responsible for holding teachers is encouraging them in experimental work which has meaning both to them and to their profession.

This was evident when seeking replacements for the four teachers. Beginning teachers from teacher training institutions within the state are aware of the school and its experimental program. It is not difficult to interest them in teaching at Beecher. Experienced teachers with imagination and initiative also look with favor on what is being done and provide another source for the replacements needed.

Teachers have been paid for two- and three-day workshops dealing with the experimental program. These workshops were held previous to the opening of school each of the past two years. Expenses accrued while teachers attended conferences or visited other schools were paid. A few teachers have received extra pay for special work done as part of the experimental program. Money has not been a primary motivator for participation in the program.

#### PROJECTS CARRIED OUT

The faculty decided, as a result of the 1957 workshop, to continue the experimental program on improvement of staff utilization through use of student aides, mechanical aids, and a non-certificated librarian. In addition to these, two new areas were added: community resources and developmental reading.

Interest in making a community survey of resource people was stimulated by awareness that the faculty did not use people in the community, nor did they know what resources were available. Interest in a developmental reading program was an outgrowth of the experimental work the first year in the use of the tachistoscope and the reading accelerator. It was found that an inexperienced teacher with a minimum of specialized training in reading could achieve some results with high-school students. The teachers were thereby encouraged to expand this phase of the work.

The developmental reading program became a group project. Each teacher on the faculty worked directly with one of the English instructors in a program of vocabulary building and each teacher helped to identify students with reading problems. The faculty of a small school, by its very size, can work together closely on projects. Of course, the

entire experimental program at Beecher takes advantage of this particular fact. The total group approach to many of the projects demonstrates a strength peculiar to the small school. Even more significant, perhaps, is the fact that participation was entirely by choice. It was emphasized throughout the study that any work done by teachers in the program was on a voluntary basis.

#### SOME GAINS REALIZED

Many things derive from an experimental program. The over-all gains identified in the present study are summarized below.

1. Improved morale
2. Better holding and recruiting power
3. Group as well as individual approaches to local educational problems
4. In-service training
5. Increased community interest
6. Increased support from the board of education
7. Recognition from other schools
8. Improved curriculum
9. Consultant help
10. Enlarged staff
11. Increased student learning.

The more specific gains are identified throughout the remainder of the report.

#### REPORT FROM ONE TEACHER

The English teacher was deeply involved in the experimental program during its second year. He conducted a number of experiments and came to some conclusions about the experiments in particular and the program in general. What he states is important because it provides a teacher's point of view. The study was, in the final analysis, conducted by the teachers and was for the better utilization of their time. Other teachers were equally involved with the program, but space does not permit individual reporting. Therefore, what the English teacher had to say is representative of faculty involvement.

Two years ago an experiment was begun to determine whether an English teacher with no specific training in reading could carry on an effective reading program in addition to the teacher's full class teaching load. The first year's results were not too encouraging and were declared "not sufficiently effective" by the teacher.

Since the first year's report, the previous English teacher has been drafted and a new teacher took his place. The new teacher's first attitude toward this experiment was one of apprehension; however, this feeling has changed to one of enthusiasm and satisfaction—even surprise.

The above enthusiasm is readily shown when one considers the degree of work and time required by the experiment as both the projects and teacher developed during the year. Firstly, a vocabulary project was



begun; secondly, an in-class reading program was started; thirdly, a special developmental reading class was set up using ten eleventh grade students; and, lastly, a reading clinic was established for fifteen junior high-school students. Each of these phases shall be treated separately in this report for reasons of clarity.

#### VOCABULARY DEVELOPMENT

The first step in the reading program was an over-all effort by the total staff to improve the vocabulary of the ninth-grade students. Since the English teacher had all these students, he carried out the major part of this phase.

The English classes were divided into two sections, with one section acting as a Control group and the other as the Experimental group. The Experimental group was taught all words in the manner described subsequently, while the control group was merely given the words selected from the faculty lists with no explanation of the words. The purpose for the latter was to see if the specialized teaching to the Experimental group was of more value than just giving the words to the Control group with no explanation and holding the students responsible for them.

The vocabulary words were chosen from special vocabulary lists, and each teacher in the high school also furnished a list of words pertinent to his subject. From these lists the English teacher chose 75 per cent of the words from the published word lists and 25 per cent of the words from the teachers' word lists for each lesson in spelling and vocabulary.

These vocabulary lessons were taught in a conventional manner; namely, on Monday the words were explained, used in context, *etc.*; on Thursday a brief period was given for students' questions about the words; and on Friday the students were tested. The tachistoscope, which will be explained later, also was used.

The final outcome was just the opposite of what was expected. The control group, which was on its own, made greater gains in scores on standardized vocabulary tests than the Experimental group with its special help. Two facts were gleaned from these results. One, the experiment was not developing vocabulary skills as much as it was spelling skills. Too, word analysis techniques should be taught for growth in vocabulary.

#### USE OF MACHINES

One of the most enjoyable and satisfying experiments conducted was using mechanical aids to improve students' reading in two ninth-grade English classes. The major objectives were to help the students improve their reading comprehension, speed, habits, and vocabulary.

The reading accelerator is a time consuming machine to use and many pupils greatly dislike the many steps they must take to use it. A con-

scientious student who diligently applies himself can use the accelerator effectively and improve his reading; however, to a class of relatively average students, it is not too satisfactory as the students simply will not use it properly on their own.

The tachistoscope was readily accepted by the pupils as a piece of mechanical equipment. However, there were only a limited number of filmstrips available. After using them only *once*, it was surprising to see how many students had already memorized the words. If enough materials were available, the tachistoscope might have value in teaching vocabulary and in creating alertness and acuity in identifying words, phases, and numbers in the shortest time.

#### CONTROLLED READER BRINGS BEST RESULTS

One of the most successful machines used in these classes was the Controlled Reader which was highly accepted by the groups and required little motivation. Briefly, the Controlled Reader is a special film projector which uses prepared filmstrips. The speed at which the strips are shown is controlled by a small, calibrated motor attached to the projector. The words on the strips are counted and the speed, or number of words per minute, can be governed by the teacher. The wide range of subject matter treated on the strips permitted selection of material highly interesting to a group. Accompanying each strip is a prepared test which tests the students' comprehension and interpretation of the selection. It took some time to learn to use this machine effectively; however, the reward in student interest and improvement was well worth the time spent.

In conclusion, it is felt that a teacher with no specific training in reading could carry on an effective reading program in addition to the teacher's full class load. This program will demand a little more time to initiate and to prepare since the teacher must first do extensive reading, and he must also learn how to operate any available mechanical equipment in order to be effective in his teaching. Mechanical equipment cannot be used as a teaching "crutch"—it demands preparation.

#### SPECIAL READING CLASSES

Since Beecher, like most schools, has a reading need, it was decided to organize two special classes in reading. These classes were taught by two different teachers (during their free periods) using decidedly different techniques.

One class, taught by the eighth-grade teacher, had seven ninth-grade students who used the SRA reading kit. The second class was taught by the high-school English teacher and contained ten eleventh-grade students who volunteered to take the course. They were students with reading needs who were invited to join the class. The course was conducted two periods a week for eight weeks. The reading accelerators

were first introduced for those who might utilize them during study hall or while in the library. The major portion of the course, however, was centered about the Controlled Reader.

At the beginning of the school year, all high-school students were given the SRA *Diagnostic Reading Test* Form A. This test along with other teachers' comments and observations was used to determine the students' reading speed for the initial setting for the Controlled Reader.

The beginning speed was 175 words per minute which is slow for eleventh-grade students. At this speed the students did poorly as they were not familiar with the machine. However, they rapidly improved their reading speed and, more important, their reading comprehension and habits. In eight weeks, the students progressed from 175 wpm at approximately 72 per cent comprehension of the material to 270 wpm at 85 per cent comprehension. This sounds like a remarkable gain—and it is. However, when the students were tested at the end of the year using the SRA *Diagnostic Reading Test*, Form B, this gain was borne out; so it seems safe to conclude that definite progress was made.

Although no Control group was maintained to compare progress, the Experimental group was compared to the remainder of the eleventh-grade class which did not receive help. This seems justified since the remainder of the class is definitely superior in reading skills and since the Experimental group contained seven of the eleven poorest readers. A chart is given below to show this comparison.

Many students in the special course felt that they had improved in their reading and some even asked for continued work, or if this course would be given again next year. The experiment was apparently successful and the following gains were made: (1) *eye span*—students were forced to read from left to right without reading any word twice; (2) *reading speed*—this is shown in the accompanying table; (3) *reading comprehension*; and (4) *motivation*—students seemed more willing to read.

*Experimental Group (Ten Eleventh-Grade Students)\**

	Reading Rate (wpm)	Vocabulary	Reading Comp.	Total Comprehension
SRA test A	221.88	30.88% tile	15.22% tile	23.3% tile
SRA test B	273.10	21.35% tile	42.40% tile	27.0% tile
%age Improvement	+18.76%	-30.54%	+64.10%	+17.40%
<i>Remainder of Eleventh-Grade Class (Twenty Students)</i>				
SRA test A	243.38	48.83% tile	51.38% tile	48.70% tile
SRA test B	268.65	33.56% tile	53.94% tile	39.22% tile
%age Improvement	+09.37%	-31.27%	+04.75%	-19.47%

\* All figures except the words per minute scores are median scores as determined by the SRA tests.

As the table shows, little work was done with vocabulary as time was too limited. Whether coincidence or not, it is interesting to note that the Experimental groups' reading speed was 273.10 words per minute which was almost the same as the final speed using the Controlled Reader. Also, referring to the previous table, one can see a very definite gain in reading comprehension; although, it is doubtful if it is as great as the second test indicates. Still there does seem to be a very definite improvement in reading comprehension and reading speed. Both groups dropped about the same on the vocabulary section of the test. Vocabulary, however, did not receive special attention except when connected with regular course work.

The experiment to learn if an untrained teacher with a full teaching program can use mechanical equipment effectively to teach reading has been quite successful in the opinion of the teacher; from test results and student reaction and opinion, it seems definitely safe to conclude that the students learned more through this extra effort. Also the teacher's own knowledge has increased. All teachers were willing to help in this program and often gave helpful suggestions. The information learned will be used as an integrated part of the curriculum, especially the Controlled Reader and the tape recorder, for teaching reading skills.

#### THE READING CLINIC

One outcome of the developmental reading program was a reading clinic. When a survey was made of students having reading problems, it was apparent that many students needed more help than the special reading classes provided. These classes focused on increasing reading rate and comprehension. Many students needed remedial work in basic reading skills. To meet these needs, a reading clinic was held after the regular school year, for a period of three weeks.

The English teacher was invited to work with the students during the clinic. He accepted with the understanding that a consultant would guide him in the work. He had little training in remedial reading. The consultant spent portions of two weeks of the clinic helping the English teacher. During the final week, the English teacher was in complete charge.

Fifteen boys and girls of junior and senior high-school age participated in the reading clinic. They were given diagnostic tests and their specific problems identified. The clinic met for three hours a day during which time students worked individually and in groups on special reading problems. After the three-week period, a final reading test was administered. The average gain in reading scores was 1.2 years. The range was from no gains to 3 years.

Individual files were compiled, including all the tests administered previous to the clinic and all work done during the clinic. A final report on each student included diagnosis, remedial work, gains, and suggestions for the next teacher.

The Reading Clinic was considered to be highly successful. The English teacher acquired sufficient skills, with the help of a consultant and on an in-service training basis, to meet student needs for remedial reading.

#### FURTHER EXPERIMENTATION IN READING

A second teacher volunteered to work with a select group of high-school students having reading problems. She cooperated with the faculty in setting up criteria for screening students to be part of her group: (1) they were freshmen; (2) were not discipline problems; (3) reading level was well below what age and I. Q. indicated; and (4) could benefit by special help. Seven freshmen met with the teacher two periods a week during their free period. The teacher used her free period for the reading experiment. A total of 16 meetings were held. *Materials.* The sole materials were those in the *SRA Developmental Reading Kit*. Each student took the *Starter Test* to determine his reading level. Then, for two periods a week, each student used the reading materials and recorded his growth in a Student Record booklet. Another form of an SRA Reading Test was administered at the end of the eight-week period. Here are the results.

Student	Starter Score in Grade	in Grade Final Score	Gain in Years
A	4	9	5
B	3	3	0
C	9	8	0
D	3	5	2
E	8	8.5	.5
F	6	8	2
G	3	5	2

The average gain was 1.6 years; the range, from no gain to a five-year gain. The mode was a gain of two years. The final reading test measured vocabulary and comprehension only.

These results are not uncommon in high-school reading clinics directed by reading specialists. High schools all over the country report student gains in reading as a result of a clinic or a special reading class experience. The important facts derived from the Beecher experience are the following.

1. A teacher with little specific training in reading can carry on an effective reading program in addition to the teacher's full class load.
2. Teachers, with the help of a reading consultant, acquired techniques of developmental and remedial reading.

These two facts are extremely important to a small school. Most cannot afford to employ specialists. It is significant that through consultant help,

and on an in-service basis, teachers can succeed in an area usually reserved for specialists. Critics may question these procedures, but to promote the virtues of teacher-specialists in a small school is not presently realistic.

The varied reading programs initiated experimentally proved successful. The teachers felt relieved to have students with reading problems given special help. Many teachers noted improved attitudes and increased reading performance as a result of the special classes. Students continued to show enthusiasm throughout the classes. Their participation was on a voluntary basis. They were informed of the purpose of the classes and the reasons for suggesting them as possible participants. They chose to take advantage of the opportunity.

Beecher is making plans to hold special reading classes at two different times during the school year. One eight-weeks period will be held first semester and another period during the second semester. Special reading classes will very likely become a permanent part of the Beecher curriculum.

The reading program involved all of the faculty in selecting students with reading problems and in feeding specialized vocabulary to the English teacher. Experiments with the tape recorder were conducted on an individual basis by the band instructor, an eighth-grade teacher for spelling, and the shorthand instructor.

#### USES OF TAPE RECORDER EXPANDED

The band instructor taped the first instruction book both for high-school and grade-school pupils. He observed that the examples on the tape helped pupils understand how to play particular exercises. He further noted greater interest and increased attention on the part of the students.

Band performances and rehearsals were also recorded. Students learned from hearing their mistakes, but frequently a student was discouraged. This was particularly true of individual solos. The better soloists were delighted with their performances, while the less capable ones and the perfectionists were discouraged. Students who went to regional contests used the recorder to hear themselves perform. Again, the better ones were motivated, while the less capable and the perfectionists were discouraged.

The shorthand instructor taped most of the chapters of a shorthand book during class sessions. This eliminated extra time for recording. The tapes were used in succeeding classes and no loss in achievement was noted. Students used the tapes independently as well as in class. The teacher had more time to attend to other preparations. A library of tapes is to be built during the 1958-59 school year. The instructor sees the need of having the same chapters recorded at different speeds to fit individual needs. She anticipates gains in achievement as the result of more individualized instruction.



An eighth-grade teacher recorded spelling lessons for her class. She recorded the words during the summer and had the entire year's work taped before the opening of the 1957-58 school year. Nothing was lost in student achievement and much was gained in teacher time. She listed some seventeen things accomplished while the recorder was in use. The procedure will be repeated in the eighth grade this year and the seventh-grade spelling list will be recorded. The experimental phase is more or less terminated at the eighth-grade level. The procedure has been incorporated into the teaching.

Tape recording is not an untried teaching device. There is much evidence of its successful use in many parts of the country. The small school seeking ways to better utilize staff finds the tape recorder a real boon. The varied demands on the time of the teacher in a small school make any aid that frees a teacher's time without jeopardizing student achievement most valuable.

#### COMMUNITY RESOURCES

Members of the faculty and of the community designed a questionnaire to distribute throughout the community. The questionnaire asked for information concerning talents, special information or materials, trips, and any other ability or experience that would interest the school population. Those filling out the questionnaires indicated a willingness to lend their materials to the school or to participants in a class or school session. The community survey of local resource people was made during the second semester. A questionnaire was sent home with each student and extra ones sent to neighbors without children in school. Faculty members interested in the project, plus interested community members, are analyzing returns and plan to make a file on the community resource people. The file will be available to all the teachers.

An interesting by-product of this project is increased interest by the community in school needs. Some people were surprised that the school did not have access to all the materials it desired. Others did not realize their particular talents or materials were in demand by school children. One man has passed along science magazines which he formerly burned. An artist has been found who might be encouraged to put on an art show. The project has benefited school-community relations.

#### STUDENT AIDES

The student aide program continued from the previous year. Changes in organization for the 1957-58 year included eliminating the student letter of application for a job requested by a teacher.

At the beginning of the school year, a packet of instruction for the clerical program was distributed to the teachers. Help wanted cards were filled out by ten teachers and posted on the bulletin board. The duties of student aides were quite varied: clerical work, directing band, and

cleaning and taking care of supplies and projects. The library assistants helped with shelving, issuing, and receiving books.

Toward the close of the term, a form was sent to each teacher for evaluation of their clerical assistants. On the whole, most teachers rated their student assistants as satisfactory.

Students' opinions toward the program varied. Some students felt that student aides, other than those who work in the library, were open to criticism from classmates for being "pets." Many students refused to participate in the program, claiming lack of time. It is interesting to note that the student aides not in the library are mostly freshmen and are usually from the English classes.

Teachers' opinions also varied. While most teachers found the program desirable, some question of how to give the work prestige was raised. Some thought that credit, a reward banquet, or some kind of recognition would provide the needed prestige.

One teacher who used a student aide last year but not this year stated she found it much easier to use girls in her classes to assist. She claimed that, unless the teacher spends a good deal of time preparing things for the aide to do, the aide becomes bored. The time taken for such preparation is extensive, and there seems to be more efficiency in involving the girls of the class.

There was a conspicuous lack of students acting as cadet teachers. The clerical aspect was stressed this year despite the fine experience a physical education and a home economics cadet had last year.

Some dissatisfaction with the student aide program was expressed at the August 1958 workshop. The dissatisfaction is more with the lack of structure and organization than with the idea of student aides. During the 1957-58 school year, the structure and organization weakened. Students were working beyond the suggested two or three hours a week and some students worked for two or more teachers. The faculty wants to continue the program, but recognizes that changes are in order.

One suggestion is to have students list interests, skills, and experiences as a means of screening them for selection. Another suggestion is to provide more experiences for the development of the student aides. Still another suggestion is to promote the cadet aspect of the program. A full re-examination of the program is to be made before its continuation.

#### LIBRARY EXPERIMENT

The professional counselor who guided the unaccredited librarian during the first year of the experiment left Illinois. Because the new consultant started late in the school year, it was decided to postpone objective evaluation devices for this year.

Three hundred books were borrowed from the Illinois State Library. These books, which were for the most part fiction and biography, were kept for six months. This enabled the buying of books in other fields.



Circulation records were kept for a short period of time, but no exact comparisons were made. It was established, however, that the average circulation per day was higher than it had been during the previous year. The library was also used frequently for class projects. This was largely the result of consultant help to both the teachers and the librarian. Also, following suggestions from the professional counselor, a bibliography has been started for several of the teachers for various units of study. An evaluation will be made at the end of the 1958-59 school year to learn what has been achieved by the library experiment.

#### EVALUATION

What were the major changes made the second year of the experimental program? *First*, there was a change of emphasis in experimentation. The emphasis moved from concern with special techniques and devices, such as a portable loud speaker and a tachistoscope, to increased concern for curriculum problems. The reading programs attempted to answer a basic curriculum need; that is, improved reading skills.

*Second*, there was a more critical attitude toward the experimental projects. The faculty was more deliberate in preparing a project. For example, many months were spent designing the questionnaire on community resources; months of preparation preceded the special reading classes. A more formal research design was made before proceeding with a study. In short, the study shifted from an exploratory approach to more of an experimental one.

*Third*, the faculty demonstrated continued growth. Members who regarded the study with some misgivings increasingly contributed to discussion and designing of a project. Some who were on the periphery have become deeply involved. Others have asked for and received the aid of specialists so that their experiment would conform to principles of good research. Still others recognize that initiating too many projects dissipates energies. They prefer focusing attention on fewer projects. Several attended workshops in other cities to learn most about a particular area in which they were experimenting.

#### NEXT STEPS

Plans for the 1958-59 school year reflect the major changes made during the second year of the experimental program. Each area selected for experimental study shows the learning and growth of the faculty in such work.

1. *Reading Program.* The study of vocabulary will include word analysis. Spelling will continue to receive attention, but students will learn how to gain meaning from analysis and context. The special reading classes will be held two times during the year. Follow-up studies of students participating in last year's special reading classes are planned.

2. *Community Resources.* Members of the faculty, with the help of community members, plan to analyze the responses to the questionnaires

and invite some resource people to participate in classes. One teacher suggested taping the talk or discussion with a resource person for future use. The community is to be expanded to include towns and cities within a 15-mile radius so that more resource people are tapped. The value of the community resources project has not yet been determined. Its contribution to improved school-community relations has, however, been noted.

3. *Use of Special Teaching Aids.* The faculty wishes to experiment further with the use of the tape recorder. Those who have used it for a year or two want to expand its uses to include libraries of tapes and variation of recording to satisfy individual student needs.

4. *Library.* While record of library use is still important, the library program is moving into service to teachers in planning teaching units. Annotated bibliographies will be compiled and resource materials referred to for use in appropriate teaching units. There will be further evaluation of the library program at the end of the 1958-59 school year. The value of an uncertificated librarian working with a professional counselor will be examined further.

5. *Student Aides.* The faculty plans to attempt to eliminate the weaknesses of the program and to restructure the initial organization. Emphasis will be more on developing students than on relieving teachers of unprofessional chores. The teacher cadet concept is to be developed. Students will have semi-professional responsibilities, such as finding resource materials in the library to assist in preparation for a unit to be taught.

Two new areas are to be part of the experimental program for the 1958-59 year. They were selected as vital to further efficiency in utilization of staff and development of students. The new areas are: (1) attention to counseling and guidance and (2) analysis of administrative organization.

Many results of the experimental program have already become a permanent part of the curriculum at Beecher. Other results indicate need for redesigning of experimentation. Some results will not be achieved until further work has been done. A final status and time study will be made at the end of this school year. This study will reveal to what extent the Experimental Study of the Utilization of the Staff in the Secondary School has changed utilization of staff at Beecher. Since Beecher will have been part of the Study for three years, results obtained should be significant.

## **Continued Study of Class Size, Team Teaching, and Scheduling in Eight High Schools in Jefferson County, Colorado**

ROBERT H. JOHNSON  
M. DELBERT LOBB  
GORDON PATTERSON

THE condition of the times in which we live requires constant reappraisal of the methods and techniques of instructional improvements being used in the public schools of America. To assume we have found the answer is as fallacious as to assume that the answer cannot be found. Consequently, the Jefferson County School District No. R-1 has accepted the premise that basic experimental research must be conducted if improvements are to be made and additional means for the accomplishment of these improvements are studied and the results established.

Attempting adjustment to the triad of problems—increasing enrollment, classroom space, and qualified teachers—District R-1 designed research studies. Supported by the Commission appointed by the National Association of Secondary-School Principals, and subsidized in part by Ford Foundation's Fund for the Advancement of Education, the first-phase research was designed during the spring of 1957 and carried out during the 1957-1958 school term. This research came to be known as the "Class-Size Study." Its purpose was to determine the effects of numbers of learners upon the achievement, attitudes, and behavior of the learners.

Classes of ten, twenty, thirty-five, sixty, and seventy or total enrollment available were formed. The content areas of these classes were: language-arts, English III; mathematics, Plane Geometry; science, Biology; and social studies, American History. Pupils in these classes were tenth- and eleventh-grade pupils, a total of 1,075.

One certified teacher was assigned to meet each class of the ten, twenty, and thirty-five category. With two exceptions, two certificated teachers met the larger classes according to variant patterns. The first exception was a certificated teacher and clerk assistant team meeting

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seventy-one eleventh-grade pupils of American History. The other exception was a certificated teacher and a degree holding but uncertificated assistant team assigned to a group of eighty-four pupils for English III.

The following hypotheses to be tested were stated in the preliminary research design:

1. An unselected group of twenty (20) students with one teacher will achieve better results than a comparable group of thirty-five (35) students with one teacher.

2. A class of seventy (70) students taught by two teachers working as a team show better results than do seventy (70) students taught by two teachers in two separate classes of thirty-five (35) each.

3. A class of seventy (70) students taught by two teachers working as a team achieve better results than do students in a class of twenty (20) taught by one teacher.

4. A team of two certificated teachers can produce better results in a class of seventy (70) students than can a team consisting of one certificated teacher and one non-certificated person with a college degree, or a team consisting of a certificated teacher and a clerk.

5. Classes with a membership of sixty (60) or seventy (70) students will produce better results in certain subjects or phases of a subject than in other subjects or phases of a subject.

6. Classes with twenty (20) students will produce better results in certain subjects or phases of a subject than in other subjects or phases of a subject.

7. Classes of thirty-five (35) students will produce better results in certain subjects or phases of a subject than in other subjects or phases of a subject.

8. A group of ten (10) superior students with one teacher will accomplish more than a similar group of students in a class of either twenty (20), thirty-five (35), sixty (60), or seventy (70) students.

9. Morale of teachers working as a team with a larger group of students is higher than the morale of teachers working individually with average size groups.

10. Two teachers working as a team can identify their areas of proficiency which would be of great benefit to the educational program.

11. The class-size experiment will produce or refine instructional techniques to the benefit of the total instructional program.

The F-ratio test of the null hypothesis was applied to hypotheses one through seven. Since no F-ratio exceeded the critical ratio, either during treatment of initial or terminal testing data, as measured by the control variable, there was no significant academic variance between and/or within the various size experimental classes.

The selected classes, being highly stratified samples, were treated separately. The assumption was made that, if hypothesis eight is true, there would be an F-ratio result from final data which exceeded the critical ratio. This was not the case since no significant variance was observed, the eighth hypothesis was rejected.

The ninth, tenth, and eleventh design hypotheses were accepted on the basis of: (1) weekly subjective reports submitted by teachers; (2)

visitation reports submitted by consultants and resource persons; and (3) subjective evaluation by the study director.

After the tentative results of the first year's study had been considered, an additional experimental program was developed to start in September 1958. This would allow further exploration of the conclusions suggested by the 1957 study and, at the same time permit investigating new ideas. Two phases were proposed for the program to be studied in 1958-59. One phase dealt with the team approach to teaching and the other phase proposed to investigate class scheduling. Each phase of the experimental program has two major objectives: (1) to improve instruction; and (2) to utilize better the secondary-school staff.

#### THE TEAM APPROACH TO TEACHING

In this phase of the experimental program, approximately 1500 pupils, enrolled at seven senior high schools, are involved. The experiment is being conducted in the subject areas of social studies, business education, English, and mathematics. Class enrollment varies in size from 80 to 150 pupils with different numbers of staff personnel assigned to the various classes according to the number of pupils enrolled. The typical class will have an enrollment of approximately one hundred pupils. Staff personnel will be assigned as follows:

1. Experienced professional teacher: a certificated teacher with a background of educational experiences and an attitude favorable to experimentation
2. Less experienced professional teacher: a certificated teacher having up to three years of teaching experience
3. Coordinator of learning: a certificated teacher who has demonstrated ability to work with small numbers of gifted pupils, inspiring them to a high level of achievement.
4. Para-professional person: an individual who will have earned a B.A. degree, but not usually any credit hours in education. Normally, the para-professional person will have a major in the subject being taught.

#### MECHANICS OF THE TEACHING TEAM APPROACH

At the beginning of each unit of work, all pupils will meet together with the four staff members. An explanation of the objectives of the unit, procedures to be followed, and other data of interest to all pupils will be given to all pupils at once by the member of the teaching team who is most effective when talking to large groups. A pre-test, constructed by the teaching team, will be administered to all pupils. The pupils will then be assigned to a class section according to their scores on the pre-test. Pupils scoring very high on the pre-test, thus indicating that they have already achieved much of the material that will be taught in the regular unit of work, will be assigned to a section under the direction of a coordinator of learning. These pupils will usually be gifted and will be

assigned projects of a research nature that are commensurate with their abilities. The problem of providing an educational program for the gifted is present in most schools, and the grouping procedures used in this experiment may offer one type of program to help provide a solution to the problem.

The pupils who score low on the pre-test, thus indicating that they need remedial work, will be assigned to a section of the class under the leadership of one of the other professional teachers. As with the gifted group, these pupils will receive instruction that will better provide for individual differences. The remaining group of pupils will receive the regular curriculum taught with the aid of materials and techniques developed by the teaching team.

The teaching team can draw on experiences gained in the study conducted in 1957-58 when classes of 60 and 70 were taught by a two-member team. The para-professional member of the team will usually assist with the large class, but works with all team members in research, preparation of materials, scoring papers, *etc.*

A program of this type has the advantage of grouping pupils at the beginning of each unit rather than for a full year, thus presenting a potential of better taking care of individual needs. It also provides for more efficient use of teacher time by relieving the professional teacher of some of the work that can be done by the para-professional member of the team, thus giving the teacher more time for preparation of teaching materials or for actual teaching.

#### SCHEDULING MODIFICATION

At the Golden Senior High School, an experiment in schedule modification combined with the teaching team approach is being tried. One assumption of the experimental program is that the traditional scheduling pattern, developed primarily for administrative convenience, does not provide for the best utilization of time available or of the unique capabilities of the staff. Therefore, the experiment called the Golden Plan, because of the name of the first high school in Jefferson County involved in this proposal, may well be called the Golden Plan in its own right if it succeeds.

The idea behind the proposal for an experiment in class schedule modification was to provide the correct amount of time for each phase of a subject at the time needed without taking any of the total class time from pupils in that subject. The subject areas included in the schedule modification experiment are: Biology, Physics, Chemistry, Algebra II, Solid Geometry, Industrial Arts, Home Economics, Art, Foreign Language, English and Journalism.

The schedule being tried allows for utilization of one teacher or a team of teachers in making a presentation to a class. It provides for time during each week for extended learning experiences covering two periods. It also provides for class sessions one period in duration. This

time is gained by having students meet with the instructor four days a week rather than the traditional five days a week.

Schedule modification as used in the Golden Plan provides for the utilization of the unique capabilities of all teachers. Each teacher can contribute in the area of his greatest competency. The cooperative planning required when the teaching team approach is used in conjunction with schedule modification should encourage more excellent preparation. Better preparation is possible because the instructor can be given increased time for preparation in the schedule modification experiment, while at the same time maintaining the normal pupil teaching load. It is anticipated that the additional preparation time will allow for the development of better audio-visual and other teaching aids.

An example of the schedule modification experiment showing how a biology class is scheduled is presented below. Periods where classes are not scheduled are for teacher planning. Classes in other subject areas have similar schedules, but with variations in the scheduling pattern to meet their particular needs.

MONDAY	TUESDAY	WED.	THURS.	FRIDAY
Period I 150 pupils (Sec. A-F)	Section A	Sec. D	Sec. A	Sec. A-C
Period II <i>Plan</i>	(double period)		Sec. B	Sec. D-F
Period III <i>Plan</i>	Section B	Sec. E	Sec. C	<i>Plan</i>
Period IV <i>Plan</i>			Sec. D	<i>Plan</i>
Period V <i>Plan</i>	Section C	Sec. F	Sec. E	<i>Plan</i>
Period VI <i>Plan</i>			Sec. F	<i>Plan</i>





Harold Howe II, Chairman of the Newton Plan Studies states: "Newton Plan gives us a framework for meeting problems in new ways. If we succeed, we will have developed a system for accepting change as normal—not as an irritation. Old problems have a way of becoming things about which you can't do anything. Newton Plan is a way of choosing problems that we think important."

## Second Stage: Revision and Extension of Newton Plan Studies

HENRY BISSEX

NEWTON Plan experiments with teaching large groups, giving teachers new roles in research and evaluation, improving lesson content, changing the use of school space, and obviating the merit salary problem. Its central concern is with the presentation of vivid, visually reinforced lessons to large groups. These presentations we call "lectures," but they are traditional lectures only in the sense that pupils take notes.

*First, the dark side.* We have not reduced the number of teachers. We have not yet fully used spaces vacated by classes going to lecture halls. We do not yet know how big a "large group" can be; that is, we have no handy formula involving lesson content, pupil ability, and size of group (although we have some guesses). We have begun development of new methods of evaluation, of a kind of continuous quality control, but the machinery is primitive.

*But, a brighter side.* Good teachers are preparing better lessons and giving them to more pupils than ever before. Many of the technical problems of effective large-group instruction are behind us. We have established the principle of variable space. We now have an evaluation team on the premises. We have made preparation of lessons and revision of the course of study a part of the school day. We have made the summer workshop a compensated extension of the school year. But most important, teachers know that we are investing in them and counting on the growth of their competence. Newton Plan is manifestly not merely a trick to get more out of a few willing teachers; it is creating a professional environment in which teachers' effectiveness and status are increased.

This year, the third of Newton Plan operations, has seen what several years ago appeared to be daring changes become accepted as part of the school. At the same time, the atmosphere of experiment has released new ideas which are now in the planning stages. On occasion, there is the sparkling success: a series of orientation lectures for business curriculum pupils, for instance, met with alert response. Some teachers have discovered bents they did not know they had. One young biology teacher

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who is becoming an expert in making visuals for overhead projection remarked at his first lesson, "This is the most exciting thing I've come across since I began teaching." At the end of four weeks of summer work for teachers, the workshop chairman commented, "We have worked hard, but we have not worked under the many, many pressures that are upon us during the school year. Our major regret about the workshop is that it is so short. We undertook more than we could achieve." If the results do not match the goals, it is not that achievements are unspectacular, but that the aims are too generous.

#### SAVING TEACHERS

*When do we start saving teachers?* There are really three answers to this question: (1) Never. We hope to improve learning, but we will not get it with fewer teachers. (2) As soon as we get TV. Newton Plan lessons then can be given to more pupils at once. (3) Right now. We have "saved" experienced teachers since the lecture series for sophomore English classes controlled the course of study and gave direction to beginning teachers (last year, half of the teachers of sophomore English were new). This third possibility argues for the experienced teacher-lecturer as the demonstrator of particular techniques and the distributor of materials for teaching the objectives of the course.

Teachers *are* saved in one way, of course, and that way is important to them. If their class attends a lecture on Monday, say, they do not prepare a lesson for that class on that day. And if they have two classes attending the lecture, they do not need to attend the second delivery of the lecture. They have thus an extra hour or two a week for paper correction and for planning.

The main reason that we do not economize on teachers is that pupils do not belong to large classes; they attend only occasional lectures. They meet once a week in Grade X English, seven times a year in Grade X Biology, twelve times a year in Grade XI History, once a week in some classes of Grade X Geometry. . . . and so on.

#### LARGE-GROUP INSTRUCTION VARIES FROM DEPARTMENT TO DEPARTMENT

Large-group visualized lectures have attracted notice as the main part of Newton Plan. The lecture grouping grew out of experimenting with numbers, the visual techniques from seeking the best means to do the job. In 1957-58, the hours of a large-group instruction added up to nearly seven hundred. Some twenty lecturers performed, including teachers in their first year, teachers with many years of experience, one full-time teacher-lecturer, and the high-school principal. Launched first by the English department, these lectures are now going on in mathematics, social studies, biology, and general education.

"Large" groups vary in size from 60 to 1100. The 60, or two-class groups, are found in geometry where two teachers bring their classes together about once a week for common instruction, especially prepared

and presented by overhead projection. The 1100-pupil class occurred only once, on the first day of school, when the entire sophomore class received instruction in study techniques.

Large groups in English, history, and biology run between 120 and 200. The size of the group is determined by a combination of factors, one of which is scheduling. For example, in English there are about three classes of each curriculum and year meeting each block. These three make up one lecture group. The next hour another three come to the lecture hall for the same presentation.

Homogeneous grouping is important if the level of the lesson is to be sufficiently high. We have little more range in a large group than we would have in a small one.

#### THE CONTENT OF LECTURES

After three years of experimentation, we are drawing some conclusions about what can be done in large-group sessions. In general, the best lessons fall into one of two categories: (1) inspirational or "door-opener" presentations, (2) mechanical or "This is precisely what we expect" presentations. All lectures require meticulous preparation—from 10 to 30 hours of research and visuals preparation for each hour of lecture.

"Door opener" lessons include study habits, poetry, dramatic reading, and teacher specialties. The possibilities within the pupil and the riches of the subject matter, we believe, can and should be revealed dramatically. For this we use the theater classroom.

Lessons in geometry, letter writing, symbols of correction, and precise writing, for example, give the pupils the exact information in a precise way. The department concerned has decided exactly what it is that the pupils must know in precise fashion and teaches it in the same way to all of a given curriculum.

Conventional lessons, which may be thought of as falling between these two extremes, are best taught in the regular classroom. This is the area of individual teacher variation. When we have taught conventional lessons in large groups, we have found that these lessons emphasize motivation and concepts or principles.

#### SEVEN THOUGHTS ON LARGE GROUP PRESENTATIONS

Some of the following comments refer specifically to the use of the overhead projector as a teacher aid. This projector allows the teacher to face the class in a lighted room while he writes on the light table of the projector or places the special 8 x 10 visuals produced in our workroom.

1. The time you have to prepare may lead you to overload any one presentation. Richness of a lecture, depth of content, is more appropriate than the fact-packing typical of our textbooks. Think in terms of what will be in the pupil's mind as he walks from the room. Come at the important concepts from every possible direction. Plan repetition and summarizing as a part of the presentation. No pupil pays solid attention for 45 minutes.

2. Plan to have the overhead projector off for parts of each presentation. Pupils are physically fatigued by period-long exposure to the same kind of visual, especially text or any fine reading.

3. Use the horizontal aspect in making 8 x 10 visuals. If you look at a distant point, you can see more laterally than you can see vertically. For this reason theater screens are wider than they are high. Reading a screen is quite different from reading a page of print: the tendency is to see everything at once. With this in mind, hold all visuals you plan to use at a distance six times the width of the visual. This will give you an idea of the experience of the pupil as he looks at the screen.

4. In timing presentations, remember that it takes time to read or get adjusted to a visual impression. It often takes longer to "read" a visual than it takes to read the same idea in print. The purpose of visualizing is to get better transmission of material, not faster transmission.

5. Watch pace. Rapid flipping of visuals or too-rapid delivery of information is extremely irritating to anybody. The normal reaction is inattention, not an increased effort to "keep up."

6. The unique feature of overhead projection is absolute control of what the pupil is looking at. With this in mind, plan to expose parts of the visuals as they are to be discussed. This is done in two ways: by overlays and by cardboard masks. Partial control is gained by use of a pointer. Plan to use the pointer and grease-pencil as simple but effective devices for calling attention to your specific subject.

7. There are no unbreakable rules—and dozens of things we haven't tried yet.

We are our own consultants. Teachers know how to prepare materials for projection and, except where special photographic or art work is required, do just that. They know the tools with which they will teach. Thus the lectures are more than illustrated talks. The lecture visuals express just exactly what the lecturer had in mind—because he made the visual from the original conception through to the transparency. To aid in the production, we have set up our own workshop in which the teachers prepare their materials. A half-time member of the art department does all our photographic work and assists with special effects visuals, sometimes preparing all the visuals for teachers who are infrequent lecturers.

#### SUMMER WORKSHOP

The 4-week summer workshop gives a picture of the kind of change that is most encouraging to teachers. The notion that a teacher is at work only when standing in front of thirty pupils is probably the biggest single cause of the time-lag between what we know we can and should be doing and the actual improvement of what pupils get.

#### EACH DEPARTMENT DESIGNS ITS OWN EXPERIMENTAL FORMAT

##### *French Records to Take Home.*

This year marks the trial run for an imaginative attempt to teach French with the use of long-playing records for homework drill in vocabulary and pronunciation.

Newton students have traditionally scored high on college entrance examinations which require abilities in reading with comprehension and in writing with accuracy and a sense of style. Since under ordinary conditions pronunciation drill must of necessity take place during the class periods, teachers have tended to slight this area in favor of the literature and composition which count on the examination. Under the new program, the students drill themselves at home with the help of the records made by the teacher and related to the class work. In this way, the spoken language gets much greater emphasis without weakening the high standards set for the written language.

Raymond Ethier is initiating this homework program in one class. He is also teaching another class of similar academic standing in the traditional manner without records. By the end of two years of this experiment, it is hoped that results will show whether this new method can be profitably adapted for use in high schools throughout the country.

Although in no way original at Newton, a language laboratory installed last summer provides the setting for completely new techniques of teaching modern languages. The laboratory is equipped with ten compartments, each with earphones, turntables, and two-way communication for taped lessons and for questioning. The laboratory is being used for classes in Russian and French.

#### *Social Studies Lectures Provide Cultural Backgrounds*

In social studies, experiment began in the Study of Nations course for college-preparatory sophomores. Last year four sections of the course (about 120 pupils) were handled by one teacher, Alice Emerson, in a program of large-group lectures, small-group seminars, and regular class work. Regular classes met twice each week; lectures for the entire group took place once every two to three weeks; groups of fifteen met for pupil reports and discussions once every other week.

History courses so often emphasize kings, battles, and dates. To complement this political and military history, the lectures and seminars provided the social and cultural backgrounds of the nations studied. In one large-group meeting, for instance, the teacher-lecturer illustrated the topic, "Life in Elizabethan London," with 35mm. color slides of costumes worn by the nobility, the merchants, and the country people who came to London on occasion. Photographs of the palace of the Queen, the mansions of the wealthy, and the half-timber homes of the middle class were also shown. Using the overhead projector, the teacher-lecturer drew a map of London to show the location of the Thames and such well-known landmarks as Whitehall, London Bridge, and the Globe Theatre. Illustrations of the period showed a middle-class marriage celebration, the sport of bear-baiting, the afternoon theatre entertainment, and the thievery of the London underworld. Through these graphic means, pupils were given a new understanding of all levels of Elizabethan society, of the bustle and stir, the love of pageantry, and the pride in



nationalism. A feeling for the drama of Elizabethan England was developed, as well as knowledge of the pertinent facts.

At the small-group seminars, students gave reports and discussed such questions as: Why did Romanesque architecture give way to Gothic? Was France the center of Western culture in the nineteenth century? How does life for teenagers in England compare with that in the United States? Before the end of the year, however, the small-group sessions were discontinued for two reasons. Scheduling difficulties mounted; and the teacher found no significant advantage in students presenting their reports to a small group rather than the regular class.

This year the Newton Plan program shifted from the Study of Nations to United States History. Two teacher-lecturers, Richard Batchelder and Clifford Card, are giving twelve large-group lectures which are closely related with the classroom work. The details of the course were worked out by teachers of U. S. History and the department chairman in a series of after-school and evening meetings. Lectures include: (1) European Heritage, (2) Heritage of the Colonial Period, (3) History of Newton, (4) Government of Newton, (5) Lewis and Clark, (6) The Civil War, (7) Significance of the Frontier, (8) The Immigrant, (9) The Roaring Twenties, The Arts in America, (10 & 11), and America in the World, (12). The lecturers make use of visual support to integrate history with geography and cultural backgrounds. They also provide important material not available to pupils in any one textbook; for example, the history and government of Newton.

#### *New Directions in Teaching Typing*

Last year a Newton Plan teacher, Helen Sweeney, initiated a personal-use typewriting course for college preparatory students using both audio and visual aids: a tape-recorder to "read" exercises to the class and free the teacher for individual help, and an overhead projector to show on the screen the copy of the assignment in its correct form. The aim of this course was to help these students learn to type at a level sufficient to their own needs more quickly than regular typewriting classes had done. Students were enthusiastic about their progress in this course. This year the Newton Plan teacher has continued to experiment, capitalizing on aspects of the course which have been most successful. She has come to the conclusion that, if facilities can be provided, a large group can be taught in this way as effectively as a regular-size class.

#### *English Department Initiates Course of Study Development*

The school year 1957-58 was the first in which a year-long program of coordinated Newton Plan activities was carried out. Although there were the usual self-questionings and criticisms accompanying any major change, the large-group lectures and other Newton Plan techniques were in the main considered to be valuable parts of the total teaching process. By the middle of the year, however, lecturers and teachers agreed that the course of study needed complete reworking to specify a closer relation-



ship of lecture material and classroom work. A trio of teacher-researchers was appointed for the job. Mary Lanigan, acting chairman of the department of English, describes the project:

In undertaking the responsibilities of this Newton Plan program in research and course of study development, the three teacher-researchers—John Harris, Anne Leathers, and Frances Smith—knew that, in the six months between January and September, they could do no more than scratch the surface of the resources for improvement of the courses of instruction in English. The ambitious research program that they undertook, conducted though it was on borrowed time, gives authority to the courses of study they tentatively present for our experimental use. This is what they did. First, they asked colleges, businesses, and industries for advice and for information. Next they questioned pupils in each curriculum of the high school and pupils recently graduated. Throughout, they did the library research that time permitted and exchanged ideas, school to school. At each stage, they brought before the department what they had learned, and asked us to weigh their experience against ours and to criticize the direction their plans were taking. Finally, during three intense weeks of Newton Plan Workshop—helped both in their research and in the formulation of the course designs by three teachers of English, Bonnie Allen, Nancy Dunn, and Thomas Sobol, by teacher-lecturers and specialists in various areas of English instruction—they produced the four courses of study presented here.

(Sample Page from Course of Study)

ENGLISH X, CURRICULUM I: Course of Study Research  
and Development

Fourth Marking Period

*First week: April 13*

*Test: Department Grammar Essentials—English classrooms*

*Second week: April 27*

Individual Outside Reading  
Assignment of uniform outside reading,  
due end of fifth week

*Test: Cooperate Reading — home  
rooms, X2*

*Lecture: Poetry—1320  
A1, D1, F1, G1, B2, C1, E2*

*Third week: May 4*

Application of Punctuation Lecture,  
preparatory to Department test, sixth  
week (See Essentials.)

*Lecture: Punctuation—1320  
A1, D1, F1, G1, B2, C1, E2*

*Fourth week: May 11*

Application of Precis Literature (beginning  
of formal precis work)

*Lecture: Precis—1320  
A1, D1, F1, G1, B2, C1, E2  
Test: STEP Writing (2 Periods)—  
English classrooms*

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NOTE: Lecture schedule and plan book page arrangement is a mechanical aid to lecture, course coordination.

By the very nature of the effort that produced them, these courses of study could not be polished pieces. They are intended not as end products, but as means to another end, better courses of study than these. They represent the culmination of the first stage of a continuing research program. The next stage is experimental: for one year at least teachers in the department of English will adhere conscientiously to the spirit and the letter of these courses. During this year, department meetings will be devoted to demonstrations and discussions of ways to teach the aims in reading, writing, and speaking that the courses list. At the end of the year, the courses come up for review and for change that experimentation proves necessary.

In designing these courses of study, the teacher-researchers were directed by two very general aims: (1) to establish an orderly developing sequence from year to year in English, thus avoiding needless repetition and insuring adequate coverage essentials, and (2) to integrate instruction in writing, in speaking, and in reading and to coordinate large group lectures with class activities and with small group and individual work.

*English Program Varies Class Sizes for Special Purposes.* In English large-group lectures acquaint pupils with basic skills, techniques, and attitudes. Some lectures are inspirational; others require direct and immediate application during subsequent class periods.

For speech instruction, pupils are grouped in three ways: large groups for lectures on the fundamentals, small groups for speech practice sessions, and normal class groups for practice and review sessions. On days that English classes are scheduled for practice sessions in speech, two thirds of a class meets with the speech teacher and one third meets with the English teacher for intensive remedial work or for enrichment of the course in reading and writing.

Seminars in English composition and literature are open to top students in the senior class. Teachers with interests and talents in these areas meet selected seminar groups during regular class periods freed by large-group lecture programs.

*Pupils Keep Newton Plan Notebooks.* Note-taking techniques are taught in a large-group lecture to all sophomores in the first weeks of school. Thereafter, pupils are responsible for taking notes in lectures and arranging them in some kind of permanent order. Under this plan, pupils are literally forced to learn note-taking skills, the lack of which hamper many college freshmen. Note-taking also emphasizes the responsibility of each pupil for *his* active handling of the information received.

#### *Mathematics Teachers Experiment with Visuals*

The first large-group lectures in mathematics were given last year by the department chairman, Eugene Ferguson, to introduce new material into the sophomore college preparatory course. Last spring another teacher-lecturer, Ernest Anderson, presented an entire block of material on probability and statistics in a series of six lectures, homework assignments, and examination. This year the material is being transferred from the sophomore to the senior course in mathematics, following the



The entire Newton faculty in English previews a lecture on paragraphing so that they have specific knowledge of the coming lecture their pupils will attend.



In the empty Newton lecture hall (a 200-seat classroom especially equipped for overhead projection), Henry Bissex rehearses a lesson in study habits.

outline recommended by the College Entrance Examination Board Commission on Mathematics.

As a controlled experiment, two classes are meeting the same period, one teacher having the overhead projector available for daily use and the other teacher bringing his class to a joint lecture approximately once a week. These classes study Solid Geometry, Plane Trigonometry, and Introduction to Calculus. To provide time for the course in probability and statistical inference, however, the Solid Geometry unit is being shortened and intensified. Three other classes will receive the same instruction as in previous years. Teachers hope that this experiment will provide some objective results on learning outcomes as well as subjective insights on the use of visual materials in teaching mathematics. If these visuals prove helpful, teachers will build a file of such materials for future use.

Last year two geometry classes met together for seven lectures. Out of this tentative beginning has sprung an ambitious program involving nine classes receiving various instruction techniques. Evaluation has been planned to test the following hypotheses: (1) visuals improve the learning of geometry; (2) lecture methods coordinated with class recitation produce better results than traditional teaching methods; (3) participation in Newton Plan lectures improves the quality of a teacher's work with his non-Newton Plan classes; (4) method of teaching makes no significant difference. In addition to the programs in geometry and senior mathematics to be evaluated, one teacher will have the overhead projector available for daily use in teaching algebra.

#### *Science Department Offers Biology Lectures*

Eight classes of the eleven college preparatory sophomore classes in Biology will attend lectures. The remaining three classes are held out as controls in an attempt to measure any differences in learning outcomes. Two members of the department, Eleanor Richmond and Vincent Silluzio, are sharing the program of seven lectures, each given three times. The topics to be presented to large groups are: protoplasm, plants, circulation, respiration, conservation, genetics, and evolution. The developmental aspect of the science department's project is that the program of lectures can grow as the library of visuals is expanded.

#### NEWTON PLAN PROVIDES NEW SUBJECT MATTER

In the beginning, Newton Plan was concerned with presenting traditional subjects in new ways. Soon, however, it became apparent that new content could also be provided. Under the heading of general education, this program offers types of knowledge, understanding, and appreciation not gained in regular classes. Last year two separate projects were worked out: a course in data-processing and a series of three lectures on music.

Because data-processing and electronic computing have become such a vital part of our contemporary world, it was decided to work out

a survey course making use of the extensive resources of this community. A teacher in the business department, Rudolph Satlak, talked with representatives from various business firms using and manufacturing electronic computers. They offered to provide speakers, visual aids, and other materials. Twenty-four volunteers (all boys, as it turned out) from senior mathematics classes were accepted for the course. The group scored so high on an aptitude test relating to abilities for data-processing that the course was designed to take advantage of these exceptional talents. Despite the fact that classes were held after school, attendance continued steadily high throughout the twenty sessions. Field trips were made to see electronic machines doing various operations, and students were assigned special projects such as wiring boards for punched-card operations and for programming computers. This course, meeting after school with no credits, is being offered again this year.

Since many pupils complete high school with no opportunity to gain an understanding of music, the music department last year was asked to give a series of three lectures for all juniors. The first lecture showed the role of the composer in creating music. To illustrate the form of a simple piece of music, the lecturer spontaneously composed a song based on a student's telephone number. The second lecture emphasized the role of the performer. Various instruments and their sounds were demonstrated by members of the Newton High School Orchestra. And while the orchestra played a Beethoven piano concerto, the score was flashed on the screen above so that the audience could follow the notes as the music was being played. For the third lecture, the role of the listener was considered. An outside orchestra performed various styles of jazz. In this way, the three lectures introduced pupils to classical music, popular mood-music, and jazz.

Because pupils were taken from regular classes to attend these music lectures, the feeling that general education interrupted school routine was strong. Although the lectures in themselves were successful, they pointed the need for a framework for general education and a schedule which would not interfere with regular classes.

This year general education includes lectures on study habits and note-taking for all sophomores and a series of orientation lectures for pupils in the business curriculum. This series of four lectures was created to help these pupils with varying abilities and from varying home backgrounds make a more complete adjustment to high school, improve their attitudes and achievement, and increase their sense of responsibility for mastering business skills.

#### EVALUATION CONTINUES WITH RESEARCHERS IN RESIDENCE

Although difficulties can be expected in evaluating such diverse operations as are included in Newton Plan, all in varying stages of growth, the Graduate School of Education at Harvard University undertook an exploratory evaluation program in 1957 at the request of the former



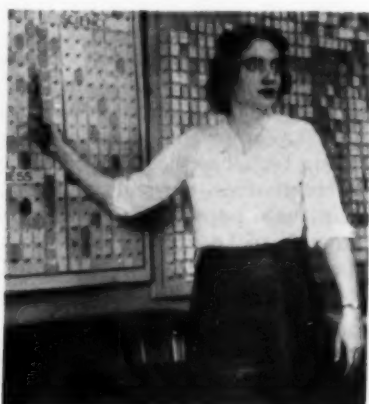
Ernest Anderson, mathematics, runs some data through Harvard's Mark I computer to check tendencies in pupil performance.



Raymond Ethier, French, records with William Winston, Newton Director of Audio-Visual, in preparation for the production of seventeen take-home recordings for pupils in French.



Elizabeth Lee, English, revises a lecture given last year.



Helen Ryan, Newton speech teacher and programmer, works out the schedule.

superintendent of Newton Schools. This project was one carried out by the School-University Program for Research and Development with a grant from the Ford Foundation Fund for the Advancement of Education.

The evaluation posed three major questions: Do students learn more in a Newton Plan program? How do teachers regard these changes from traditional methods? What are the attitudes of pupils? To determine whether Newton Plan makes any significant difference in pupils' rate of learning, extensive testing was carried out both in the fall and in the spring. In December, teachers filled out a long, confidential questionnaire on their reactions to various changes brought about by Newton Plan. To supplement these statistics, two-hour interviews were held for fourteen teachers selected as a representative sample of the faculty. In March, about a hundred sophomores and the same number of juniors selected at random from the student body were given a test devised to reveal their attitudes towards different aspects of Newton Plan. In a preliminary report, the results of the 1957-58 evaluation have been summarized:

The results of the evaluation indicate that in the middle of its second year of operation a large number of teachers in the Newton High School had only a minimum acquaintance with the Newton Plan. It further revealed that there were often considerable differences in opinion among individuals with different degrees of acquaintance with the program.

Among the teachers there was a great deal of variation in attitude toward the Newton Plan, from active support through waiting-to-see to opposition. These attitudes are for the most part supported by reasonable perceptions of possible advantages and disadvantages of the instructional program. There does not seem to be any position which has attracted an overwhelming degree of support, although there seems to be a tendency for individuals to gravitate during the year to a more objective appraisal of an operating program of instruction.

Among the students also there is a considerable variation in attitudes toward the Newton Plan. These attitudes are not related in any simple way to the sex or curriculum of the students. There are some differences between the attitudes of the tenth and eleventh grades, but we do not know whether these are to be attributed to differences in age and educational status or to the fact that the programs to which the two grades are exposed, although in the same department, are considerably different.

A comparison between the learning outcomes of the students participating in the Newton Plan and those participating in the more traditional instructional program results in no essential differences.

Although during the first year of evaluation communication lines between school and university clogged at times, this year has seen markedly closer cooperation with the setting-up of a research team. Harvard has sent a "researcher-in-residence" to teach one class at Newton and spend the rest of her time navigating the evaluation; at the same time, Newton has freed one teacher of one of his classes to cooperate on



this project. Thus, the high school has its evaluators on the premises. In comparison to the conventional arrangement of having the "team of judges" swoop in, try to get some idea of what is going on, test, depart, and later, much later, mail back a report, the advantages are obvious.

The research team is in residence for anecdotal records, for spot evaluation, and for pulse-taking. Only in this way can the resources of the university be made truly serviceable to a developing program. Traditional evaluation merely tells whether the patient is alive or dead. Evaluators in residence, by virtue of their continuous checking and feeding back of information, can help the program grow.

### SPACE

One day during the August workshop, the group was called together to look at a few floor plans on the overhead projector. The drawings showed the division of large classrooms, the moving of the library, the alteration of the former library room to make a lecture hall. These were the very visuals that had been used in a meeting with the superintendent and with the buildings supervisor two years before. The suggestions had been followed. As a result of this Newton Plan thinking about space reorganization, the school building took two classrooms for the library, but, as a result of dividing other large classrooms, netted five new classrooms and a lecture hall. The point was that sometimes something comes of proposals made—even though they may have seemed extravagant at the time!

Of course when three classes are in the lecture hall, there is only occasional use made of vacated classrooms. But these classrooms are available to small speech groups and to clinic workers.

The Newton South High School has in its design a 200 seat lecture hall. Provisions are made in some new classrooms for overhead projection and a workroom for teacher-production of visual teaching materials has been included in the floor plans of the new buildings. Thus Newton Plan has had an impact upon the design of buildings, has experimented with curtains, seats, and equipment, often finding that simple inexpensive furnishings and drapes were best—all of which will add up to saving in the new building design and equipping.

### SUPPORT FOR NEWTON PLAN

The Commission on the Experimental Study of the Utilization of the Staff in the Secondary School, administering funds from the Fund for the Advancement of Education, has continued its support with a grant of \$28,000 for the school year 1958-59. Almost all of this amount goes for personnel; salaries for the summer workshop, for example, came from the grant funds.

The Newton School Committee's support has been dramatic and concrete. The freeing of regular personnel for in-school Newton Plan work,

the purchase of all essential equipment and supplies, and building alterations have more than equalled the amount of the grant.

The School and University Program for Research and Development (SUPRAD) continues its support of the evaluation conducted by the Harvard Graduate School of Education. SUPRAD also supports the special Program in the language department.

Tecnifax Corporation of Holyoke, Massachusetts, has supplied visual communication training for most of our teacher-lecturers. They have published the text and visuals of a sample lesson in English and have supplied technical advice and assistance.

#### CONCLUSION: NEWTON PLAN PROVIDES ROLES FOR SPECIALISTS

*Newton Plan has redefined the school.* It is not a collection of rooms in which a collection of teachers work each with the same number of pupils. The school becomes a setting for teachers to develop their own special talents and, by doing so to give more to the pupils.

We do not attack the major shortage in education by squeezing by with fewer teachers. We do not add to teacher supply by working a few willing people overtime. We meet the shortage of quality teachers by increasing the effectiveness and the audience of good teachers we have right now. We add to their ranks by making their ranks attractive: with special roles for individual growth and with compensation to match.



And there is time for lunch and the good talk that goes with it.

## Teachers Are Recruited and the First Year of College and Laboratory Experiences Are Accounted For in St. Paul

KENNETH R. DOANE  
WILLIAM J. SCANLAN

### BACKGROUND AND DESCRIPTION OF THE PROJECT

THE thrill of getting into the classroom, doing the things one wants to do and learning about adolescents were experiences of a group of first-year college students. They observed in the classroom, assisted the project teachers, shared in the joys, the difficulties, the disappointments of the classroom, and gradually learned to see adolescents from the teacher's point of view. As one teacher trainee wrote at the end of the year after fifty hours in the classroom sharing the thrilling experiences with the project teacher: "Perhaps this kind of Victory is what makes sensible easy occupations seem not sensible by comparison and infinitely less rewarding." The project described in this article is one sponsored by the Commission on the Experimental Study of the Utilization of the Staff in the Secondary School. The detailed discussion of its origin and growth through the first year will be found in a previously written article by the authors in the January 1958 BULLETIN.<sup>1</sup>

Thirty trainees were chosen for the project in the months of April and May 1957. These are the thirty reported in the original article. Three left the program before college began in the fall of 1957. Three alternates were chosen immediately so that thirty teacher trainees began college that September.

During the school year to June 1, 1958, four of the trainees who began college in September withdrew from the Project. A full discussion of these cases and others not continued into the second year follows in a later section.

In September 1957, the thirty teacher trainees were enrolled in five colleges as follows: Hamline University 9, Macalester College 8, Uni-

<sup>1</sup> Doane, Kenneth R., and William J. Scanlan, "Future Teachers Are Recruited and Plans Made for a Teacher-Trainee Group in the St. Paul, Minnesota, Schools," THE BULLETIN of the NASSEF, Jan. 1958, pp. 94-114.

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versity of Minnesota 8, College of St. Thomas 3, and College of St. Catherine 2. These thirty trainees indicated majors as follows: mathematics 6, English 5, social studies 4, music 4, science 4, speech 3, core 1, business 1, home economics 1, boys' physical education 1.

### *Seminars*

Once each week the teacher trainees attended a seminar. Twenty-five seminars were held during the academic year 1957-1958. The objectives of the seminars were as follows:

1. Orient the trainees to the philosophy, the policies, the personnel of the St. Paul Public Schools.
2. Orient the trainees to the laboratory experiences.
3. Orient the trainees to the junior high schools including an understanding of the philosophy, the program, and the population that attends the junior high school.
4. Orient the trainees to college through lectures and conferences with college advisers.
5. Orient the trainees to an understanding of the psychology of adolescence.
6. Orient the trainees to an understanding of the psychology of learning.

The seminar served as a means for attending to routine business such as learning to keep appointments, being on time, how to dress for the classroom.

These twenty-five seminars were held in a classroom 20 feet by 28 feet. The atmosphere was that of a classroom. Art materials from junior and senior high schools were on display. In that way the teacher trainees had an opportunity to examine art work that was created by high-school students. At other times such materials as displays of pictures of the teacher trainees at work in the classroom were set up. Suitable tables and chairs were used where the trainees met and conducted their seminars. These tables were occasionally moved around to fit the needs of the particular seminar.

It is difficult to evaluate the seminars except as an integral part of the St. Paul Teacher Recruitment Project. What was valuable to one may have been less valuable for the next person. To separate the seminar from the laboratory experiences or to contrast them or to try to weigh which contributed more seems purposeless to the writers. The seminars were organized to supplement and implement the laboratory experiences. Both the seminars and the laboratory experiences were intended to make the teacher trainees richer, more resourceful people, better able to fulfill their role as teacher trainees, and eventually as skilled classroom teachers.

### *Laboratory Experiences*

The objectives of the laboratory experiences of the first year of the program were:

1. To observe in the classrooms outstanding and good teachers and learn what constitutes a good learning situation. The observations were to take place in several schools and in many classrooms. The early observations were to be in many curricular areas.

2. To observe classrooms outstanding and good teachers in the area of interest where the teacher trainee thought he might want to concentrate later in his college career.

3. To observe first for short periods with individual teachers, limiting the classroom observation to one or two hours. To observe later in the year with an individual teacher for sixteen hours. Finally, to observe with a second individual teacher for an additional eighteen hours in a second classroom.

In addition to observations in the classroom, the teacher trainee was expected to have an opportunity to learn certain simple skills and techniques under the supervision of the classroom teacher. For example, the trainee had an opportunity to discuss plans, ask questions, and assist with certain skills. The trainee evaluated written work of the pupils using a key or guide prepared by the teacher. The trainee assisted in the use of visual aid equipment under the supervision of the classroom teacher. The trainee worked with small groups of four or five pupils, following the directions of the classroom teacher. He was learning how to be a teacher under the close supervision of a superior teacher.

The laboratory experiences of the first year averaged two hours per week for a total of fifty hours for the academic year 1957-58. These experiences were planned so as to be limited in number and in time spent in the classroom. However, they were planned to orient the teacher trainee to good schools and to classrooms where learning was high. It was a getting-acquainted period—getting acquainted with high schools, with teachers, with adolescents in the junior and senior high schools. These experiences were planned so that the trainees would observe and begin to be a part of rich learning experiences. The laboratory experiences were vocational in nature. They were a part of a program planned to recruit potential teachers for the secondary schools of St. Paul. The laboratory experiences were a part of a program in teacher education that is supplementary to the program given by the college. The experiences were planned by the writers and approved by the St. Paul Teacher Recruitment Project Advisory Committee.

#### *Financial Assistance to Teacher Trainees*

Eight students registered at the University of Minnesota and received grants of \$500 each. Twenty-two students registered at the private colleges, each being eligible for a grant of \$700. The total expenditures to these 30 teacher trainees registered in five colleges was \$18,395.24. Each trainee was asked to keep a record of how he spent his grant including tuition costs, college fees, textbook costs, cost of supplies, and money spent for transportation.

Differences in expenses existed as one would expect. Teacher trainees taking vocal or instrumental music lessons at the college had higher costs than those who did not. Transportation costs varied widely. Trainees attending the University of Minnesota had higher transportation costs because of higher fares on public transportation to the University of Minnesota. There were other differences depending upon

the location of the trainees' homes, and the location of the public schools to which the trainee was assigned.

#### *Summary of Work Experience for Summer 1957*

Twenty-six of the thirty teacher trainees reported being employed during the summer of 1957. Two reported not being employed; two failed to report an employment record. The young women reported being employed as typists and stenographers more frequently than at any other job classification—six being employed in this type of work. Three were employed as camp counselors and two others as retail sales clerks. Other occupations were engaged in by one woman each.

The young men were employed more often as stockboys than in any other job classification, three young men being employed in this type of work. In other jobs only one young man was employed in each. These jobs included such assignments as laborer in furniture moving, retail store salesclerk, billing clerk, junior bookkeeper. The pay ranged from 70 cents an hour to \$1.50 per hour; the average being \$1.10 per hour. The total earnings ranged from \$50 to \$600; the average being approximately \$350 for the summer employment.

#### *Summary of Experiences with Children and Youth for Summer 1957*

Twenty of the teacher trainees worked with children or youth during the summer of 1957; six trainees reported they did not work with children or youth during that period. Being a Sunday School teacher or being a Church Youth group leader was the type of activity most frequently reported. Working on a playground was the next most frequent. Assisting as a YMCA field trip leader, acting as a rifle instructor to youngsters 9 to 14 years of age were examples of activities engaged in by the teacher trainees.

#### *Project Advisory Committee*

The Project Advisory Committee is the policy making organization. It has made the policies that have governed the St. Paul Teacher Recruitment Project.<sup>2</sup> The major policies have been adopted during the last school year.

1. Teacher trainees may progress in college during the remaining four years so that individual students may work toward a master's degree during the next four-year period if the trainee is qualified to do so and if in the opinion of the consultant it is advisable for the trainee to do so.

2. The position of the Project Advisory Committee concerning marriage of the trainee is one in which the trainee will be dropped from the project and the scholarship is not renewed if the trainee marries during the academic year. The policy will be reviewed in June 1959.

#### *Subcommittee Screening*

A subcommittee on screening candidates for vacancies in the program consists of four members of the Teacher Recruitment Project Committee.

<sup>2</sup> Doane, Kenneth R., and William J. Scanlan, *Ibid.*, p. 96.



This subcommittee makes recommendations to the Committee of suitable candidates for the scholarships.

#### *Subcommittee Evaluation*

The subcommittee on evaluation consists of six members of the Teacher Recruitment Project Committee. The subcommittee has called on Dr. J. Lloyd Trump of the Commission and Dr. William Edson, Professor of Education at the College of Education, University of Minnesota for professional advice. Policies and procedures for evaluating the five-year project will be evolved in 1958-59.

#### *College Advisory Committee*

A college advisory Committee consisting of five members, one from each college that has trainees in the program met and advised the consultant and assisted where possible. The committee was helpful in directing college students interested into the program as recruits to fill vacancies. The individual member of the college advisory Committee acts as an adviser to the college from the Committee. He consults with trainees who are registered in his college.

#### *Workshop 1957*

Forty experienced classroom teachers from the St. Paul Public Schools attended a two-day workshop August 28 and 29, 1957. Teachers from such important fields as business, core, English, home economics, mathematics, music, science, social studies, and speech attended the workshop. The teachers made definite recommendations concerning the laboratory experiences of the trainees.

*Mathematics and science teachers* recommended: (1) In the early stages, the teacher trainees might assist with clerical duties, correct test papers (with key), act as laboratory assistants, collect resource materials. (2) In the second year of the program, the trainee should learn to use guidance materials under the project teacher's supervision and study. (3) The last three years of the program should remain flexible at this time. It is too early in the program to structure the program too rigorously. Training should be as broad as possible and include both junior and senior high-school experiences.

*Social studies, language arts, and core teachers* recommended: (1) The trainee should get a cross section of the entire secondary-school program during the first year. (2) He should observe in more classes than in his major and minor fields. (3) The trainees who plan to major in the language arts or social studies should become acquainted with the core. (4) The trainee should work with one project teacher for a period of ten weeks during the second year; likewise, the trainee would spend his second year with four different teachers. (5) The trainee should be given small jobs to do during the first year of the program. (6) The trainee should observe a teacher "around the clock" for a limited time for a picture of a teacher's day. This should be done during the second and third years of the training program.



*Music teachers'* recommendations include the following: (1) The trainee should observe in many buildings in many different areas during the first year. (2) What can the trainee do for the project teacher? (a) Run a tape recorder intelligently; (b) become familiar with the music used in secondary schools, including the music in the file of the project teacher; (c) do clerical work; (d) by the third year, the trainee should be able to plan for simple assembly programs, including "sings" and small groups appearing in public; (e) coach small groups for vocal or instrumental ensembles. (3) What can the project teacher do for the trainee? (a) Sell the trainee enthusiasm by being enthusiastic; (b) educate the trainee to accept the idea that teaching music involves a great many hours of effort—in the classroom and outside the classroom, and many extra hours of work and much effort; (b) help the trainee make the transition from the theoretical to the practical application; (c) encourage the trainees to learn the arts in their many forms; (d) encourage trainees to develop personality, leadership, and ability to attract and hold large groups of students and develop skills necessary to teach music successfully.

*Home economics teachers* recommendations: Trainees should have the opportunity to observe in every area of home economics.

*Business education teachers:* (1) Instill confidence in trainees by giving them varied experiences; (2) project teachers should demonstrate good teaching techniques; (3) what clerical duties should the trainee learn to do? (a) Enter the class roll in the record book; (b) record marks in record book; (c) complete detailed clerical work on report cards; (d) correct papers from a prepared key; (e) take small groups of students on field trips; (f) order films and arrange viewing; (g) prepare bulletin boards; (h) begin to teach small groups, such as late beginners or slow learners; (i) assist with club activities; (j) assist with assembly programs.

### *The Project Supervisor*

The project supervisor is referred to as the Consultant. The consultant is a person who has had previous experience in the St. Paul Public Schools as a teacher and as a principal in both elementary and secondary schools. He has taught education courses at the college level in three of the colleges in the St. Paul metropolitan area. His duties follow closely the duties outlined in the previous article.<sup>3</sup> The emphasis during the past year has been along these lines:

1. Meet with the teacher trainees as a group in seminars.
2. Plan the laboratory experiences for the teacher trainees.
3. Select, with the help of others, the project teachers with whom the teacher trainees work.
4. Assign the teacher trainees to the particular project teachers.
5. Confer with the project teachers concerning the teacher trainees.

<sup>3</sup> Doane, Kenneth R., and William J. Scanlan, *Ibid*, p. 98.

6. Confer with the teacher trainees as a counselor.
7. Help teacher trainees get part-time employment during Christmas vacation and summer vacation.
8. Confer with college advisers concerning individual teacher trainees.
9. Serve as secretary to the Project Advisory Committee.
10. Serve on all sub-committees of the Project Advisory Committee.
11. Administer the funds of the project.
12. Inform the teachers in the St. Paul Public Schools concerning the project by appearing at teachers' meetings in the secondary schools.
13. Direct, with the help of others, summer workshops, 1957 and 1958.
14. Carry out policies laid down by the Teacher Recruitment Advisory Committee.
15. Interpret the program to the Project Advisory Committee.
16. Interpret the program to the press and to local groups in the community.
17. Promote teacher recruitment by appearing before Future Teachers of America Clubs in St. Paul.
18. Select, with the help of others, the teacher trainees who replace original appointments.

#### PERFORMANCE AND GROWTH OF THE TEACHER TRAINEES

Teacher trainee performance and growth during 1957-1958 was expressed in several ways. Honor point averages are conventionally used for describing academic performance in college. Gains in standardized achievement test scores is another measure of mastery of subject matter in basic curricular areas. Gains in scores on the *Minnesota Teacher Attitude Inventory* may express changes in trainee attitude toward teaching and secondary-school-age pupils. These data are presented in the following table for the 26 trainees who completed the first year of the Teacher Recruitment Project.

#### College Marks

The mean honor point average for the 26 trainees who completed the first year of the Project is 1.46. The highest honor point average is 2.64, and the lowest is 0.14. In calculating the honor point averages, three honor points were awarded for each credit of A, two honor points for each credit of B, one for each credit of C, 0 for each credit of D, and minus one for each credit of F. Three trainees have honor point averages of 2.00 or better, and eleven have an average between 1.50 and 2.00. Only one of the trainees with an honor point average of less than 1.00 will continue into the second year of the Project.

Since the original selection of the trainees was based upon a large number of criteria including several factors bearing upon probable success as undergraduate college students, the performance of the trainees as measured by college marks of the group substantiates the practice of making selections using a variety of criteria. However, five of the group earned an honor point average of less than 1.00 which might suggest that other factors than those used in making the selections were operative so far as the academic performance of these trainees were concerned.

TABLE I. Measures of Academic Achievement and Teacher Attitude

Trainee Code	College *	Honor Point Average	G.C.T. Soc. St. Gains	G.C.T. Lit. Gains	G.C.T. Sci. Gains	G.C.T. Math. Gains	G.C.T. F. Arts Gains	G.C.T. Total Gains	M.T.A.I. Gains
0110	H.U.	1.80	-4	-9	3	8	8	6	54
0330	H.U.	1.69	3	5	1	5	-3	11	41
0586	St.T.	1.09	4	6	5	7	-5	17	37
0658	Mac.	1.81	7	-6	-1	5	-6	-1	-6
0757	H.U.	1.83	20	3	2	6	6	37	2
4811	U.M.	1.91	0	2	1	10	3	16	4
1261	Mac.	2.33	14	6	0	4	-6	18	37
1336	H.U.	1.00	-2	-3	-7	-2	5	-9	15
1473	H.U.	2.64	10	1	2	2	0	15	-30
1595	St.C.	1.13	6	-2	1	-6	10	9	-7
1621	Mac.	0.14	3	-1	4	0	12	18	29
1763	H.U.	0.43	7	-1	1	10	3	20	8
2218	Mac.	1.20	-5	-3	1	8	5	6	15
5024	Mac.	1.72	1	-2	7	5	-4	7	-22
49112	U.M.	1.83	-2	7	0	2	3	10	0
2575	Mac.	1.82	-1	3	-1	11	4	16	-15
5111	U.M.	1.80	5	13	1	3	6	28	-15
2614	U.M.	1.41	0	-11	0	8	-1	-4	7
2886	U.M.	1.89	12	10	1	3	-3	23	48
2948	Mac.	0.84	2	0	6	6	-2	12	-18
3066	H.U.	1.26	5	11	0	7	9	32	30
5214	U.M.	0.62	1	9	-4	8	1	15	12
5321	U.M.	2.28	6	9	3	0	-2	16	38
3424	H.U.	1.39	11	0	6	-2	3	18	2
4045	St.T.	0.15	-4	1	3	6	0	6	
4250	U.M.	1.83	10	9	4	-3	-1	19	59
Total			109	57	39	111	45	361	325
Number			26	26	26	26	26	26	25
Mean			1.46	4.19	2.19	1.50	4.27	1.73	13.88

\* H.U.—Hamline University, Mac.—Macalester College, St.C.—College of St. Catherine, St.T.—College of St. Thomas, U.M.—University of Minnesota.

From the literature of success in college and the prediction of academic performance in college, mean honor point averages for college freshmen are commonly described as near 1.00. Since the mean for the trainees was 1.46, we might infer that the academic performance of the group is better than the population of college freshmen.

#### Results on Cooperative General Culture Tests

The trainees took the *Cooperative General Culture Tests* as a part of the original battery of selection criteria; the same tests were administered in May 1958 to the 26 trainees who completed the year. These scores were compared to yield the gains-data shown above.

In the social studies test, the mean gain was 4.19. The maximum gain among the trainees was 20, and the greatest loss in score was -5. Twelve trainees had gains of 5 or more in their scores on the social studies test. Using college sophomore norms, the median performance on this test in 1958 was the 75th percentile while the corresponding median in 1957 was the 60th percentile. These results indicate the favorable performance

of the trainees in the social studies before the Project began, and furthermore, indicate an improvement over an already high level of mastery, as compared with a nation-wide sample of college sophomores. It should be kept in mind the trainees are freshmen and are being compared to sophomores.

In the literature test, the mean gain was 2.19. The maximum gain among the trainees was 13, and the greatest loss in score was -11. Ten trainees had gains of 5 or more in their scores on the literature test. Using college sophomore norms, the median performance on this test in 1958 was the 75th percentile while the corresponding median in 1957 was the 60th percentile.

In the science test, the mean gain was 1.50, the least gain for any of the five parts of the battery. The maximum gain among the trainees was 7, and the greatest loss in score was -7. Four trainees had gains of 5 or more in their scores on the science test. Using college sophomore norms, the median performance on this test in 1958 was the 60th percentile while the corresponding median in 1957 was the 55th percentile.

In the mathematics test, the mean gain was 4.27, the largest gain for any of the parts of the battery. The maximum gain among the trainees was 11, and the greatest loss in score was -6. Fifteen trainees had gains of 5 or more in their scores on the mathematics test. Using college sophomore norms, the median performance on this test in 1958 was the 75th percentile while the corresponding median in 1957 was the 65th percentile.

In the fine arts test, the mean gain was 1.73. The maximum gain was 12, and the greatest loss in score was -6. Eight trainees had gains of 5 or more in their scores on the fine arts test. Using college sophomore norms, the median performance on this test in 1958 was the 65th percentile while the corresponding median in 1957 was the 55th percentile.

An analysis of total gains indicates a mean gain of 13.88 in total score. The median performance for the whole test was the 75th percentile in 1958 as compared with the 65th percentile in 1957. Fifteen trainees had a total gain in score of 15 or more. Apparently most gains in scores were made in mathematics and social studies while the least gains were made in science. When the trainees' performances on the battery are compared with a nation-wide sample of college sophomores, the trainees, as a group, have done better than at least 60 per cent of the college sophomores. It should be remembered that the trainees have completed only one year of college, yet they compare favorably with college sophomores.

On the basis of these two measures of academic performance, college marks and *Cooperative General Culture Test* results, the trainees, as a group, have given a good accounting of themselves and justified the faith placed in them by the Project Advisory Committee. Not all individuals, however, lived up to expectations.

### *Results on Minnesota Teacher Attitude Inventory*

The trainees took the *Minnesota Teacher Attitude Inventory* as a part of the original battery of selection criteria; they took it again in May 1958. These scores were compared to yield the gains-data shown above.

The mean gain was 13.00. The maximum gain was 59 which might be interpreted as reflecting a change from ambivalence toward teaching to interest in the work and problems of the secondary-school teacher. The largest loss in score was 30; in this particular case, it might reflect a more realistic self-appraisal with respect to teaching than the trainee indicated in the first *Inventory* result. Nine of the trainees had gains of 20 or more. The size of the gains suggests that rather significant changes in attitude toward teaching and secondary-school-age youth did occur during the 1957-58 year. These changes may be attributed to the composite of laboratory experiences under the supervision of project teachers in the secondary schools of St. Paul, weekly seminars, college studies and associations with college students or faculty, general maturation, or other factors.

### *Results on the Minnesota Multiphasic Personality Inventory*

The *Minnesota Multiphasic Personality Inventory* was administered as one element of the original battery of section criteria. The *Inventory* was given to the trainees in May 1958 as one of the criteria to determine which trainees would be continued to the second year. The profiles of individuals were compared. Only minor changes in profiles were evident. In only one case is there justification for follow-up counseling with respect to one scale. In six or seven cases an increase in defensiveness in responding to the *Inventory* items was noted. Apparently the experiences of the year had no lasting harmful effects on trainee personalities.

### *Supervising Teachers' Ratings*

At the end of the sixteen hours of observation and other laboratory experiences with one project teacher, and again at the end of eighteen hours of observation and other experiences with a second project teacher, the project teacher was asked to evaluate the teacher trainee. The form used for the second experience under the second teacher headed *An Evaluation of Student Trainees—First Year 1957-1958*, dated May 1, 1958, follows below.

## TEACHER RECRUITMENT PROJECT

307 Franklin School

1 May 1958

To: PROJECT TEACHERS

From: WILLIAM J. SCANLAN

Re: An Evaluation of Student Trainees — First Year 1957-1958

You, as the project teacher named below, are asked to evaluate the trainee, also named below. We realize it is difficult to judge first-year college students. However, certain personal strengths and limitations are apparently evident to most of us concerning the individual. Likewise, certain professional attitudes may be showing up at this

early stage. Keep in mind that the trainee has already completed one assignment of 16 hours during the period January and February. He (she) is completing 18 hours under your supervision which should be completed in most cases by May 29.

Please return this form to Mr. Scanlan in the self-addressed envelope anytime it is convenient to you. We would appreciate all reports by approximately June 1.

Your evaluation is confidential and will not be shown to the trainee.

Key: 4 - Excellent-Outstanding-shown to a remarkable degree.

3 - Good-Better than average. Some evidence of the qualifications evaluated.

2 - Average-Acceptable but in no way outstanding or above average.

1 - Below average-Needs to show marked improvement in the qualifications discussed.

0 - Poor-Inadequate to a marked degree.

Please rate each of the qualities 4, 3, 2, 1, 0.

..... Promptness in keeping appointment. Regularity in appointments.

..... Personality-Cheerfulness-Tact. Ability to get along with you as a supervising teacher. Ability to take directions and carry them out to your satisfaction.

..... Personality-Cheerfulness-Tact. Ability to get along with students in the classroom. Ability to get students to cooperate with the trainee. Can he lead the group in the directions he wants them to go?

..... Knowledge of subject matter. Do you think the trainee has the potential to acquire the knowledge needed to teach in this field?

..... Interest in teaching. Does he seem interested in classroom techniques? Is he enthusiastic about being in the classroom?

..... Personal appearance. Is he neat? Is he well-groomed? Does he dress according to good taste for the classroom assignment?

Remarks: Please write a sentence or two that you feel best describes the trainee's strengths.

.....  
.....  
.....

Please write a sentence or two you feel best tells us where this trainee needs to improve most during the next four years.

.....  
.....  
.....

Thank you for your time. We deeply appreciate the professional services you have rendered.

WJS/rcd

WILLIAM J. SCANLAN  
Consultant

.....  
(Supervising Teacher)

.....  
(School)

.....  
(Trainee)

.....  
(College)

.....  
(Signature of Supervising Teacher)

DATE .....

*An Evaluation of Project Teachers' Ratings*

Table II makes a comparison of the March 12 and May 1 ratings. In comparing the March 12 and May 1 ratings there is a striking similarity. In both ratings, the project teachers gave an overwhelming number of 4's to students in every area with the one exception—"Getting along

TABLE II. Comparison of Ratings

	Ratings	March 12 ratings frequency	May 1 ratings frequency
<i>Promptness in Keeping Appoints.</i>	4	16	12
<i>Regularity in Appoints.</i>	3	6	8
	2	4	1
	1	0	2
	0	1	1
	Blank	0	1
		—	—
		27	25
<i>Personality-Cheerfulness-Tact.</i>	4	14	17
<i>Getting Along with Supervisor.</i>	3	9	3
	2	4	4
	1	1	1
	0	0	0
		—	—
		28	25
<i>Personality-Cheerfulness-Tact.</i>	4	6	8
<i>Getting Along with Students in Classroom.</i>	3	12	9
	2	5	6
	1	1	1
	0	0	0
	Blank	2	1
		—	—
		26	25
<i>Knowledge of Subject Matter.</i>	4	10	10
	3	8	8
	2	4	3
	1	0	1
	0	1	0
	Blank	2	3
		—	—
		25	25
<i>Interest in Teaching</i>	4	15	14
	3	6	5
	2	5	4
	1	1	1
	0	0	0
	Blank	0	1
		—	—
		27	25
<i>Personal Appearance.</i>	4	13	12
	3	7	6
	2	6	6
	1	1	1
	0	0	0
		—	—
		27	25



with students". Here the rating of 3 is the model rating in both the March 12 and May 1 rating. In analyzing the data, one is impressed with the lack of 2 or 1 ratings in several categories. One may well raise the question: Are the project teachers unrealistic or uncritical in the evaluation of the teacher trainees? Is there a halo effect connected with the program that makes the project teacher less inclined to recognize average ability in these potential teachers? One cannot answer these questions objectively at this time.

Comments by the project teachers concerning the trainees proved interesting and valuable to the writers. Open-end comments were called for in both the March and May evaluations. The following comments are typical:

#### Case 1

MARCH 12, 1958

*Strength:* . . . . .dives in and gets things going. She is very willing to take over and try.

*Needs to improve:* More knowledge in the subject area and in proper educational techniques.

MAY 1, 1958

*Strength:* She has an untiring willingness to "fit" into the pattern already set by the supervising teacher. On one occasion she planned and presented a short report with five students and clearly divided the responsibility of each student.

*Needs to improve:* I feel that . . . . . will naturally mature to the point where she will be less "chatty" with students—e.g., discussing her own age with them, and so on.

#### Case 2

MARCH 12, 1958

*Strength:* Sound moral principles make her outstanding. . . . . has an unusual kindness in her makeup. This is quickly appreciated by people with whom she works.

*Needs to improve:* If we can keep her enthusiastic about teaching, we will have a gem.

MAY 1, 1958

*Strength:* Outstanding interest and boundless energy.

*Needs to improve:* . . . . . needs to learn how to select more attractive and appropriate clothes. Also must give full time assigned each year.

#### Case 3

MARCH 12, 1958

*Strength:* He is enthusiastic about physical education. He wants to coach very badly. I believe this desire to coach will put him through school. . . . . is a good teaching prospect. I hope he will go all the way.

*Needs to improve:* He must learn more about child growth and development, also more about individual differences. He is quick to discipline. This probably stems from lack of experience and fear that the class will get out of hand.

MAY 1, 1958

*Strength:* He has a lot of drive, works hard. He wants to coach very much. Enjoys working with boys.

*Needs to improve:* More experience needed. He tends to overtalk points. Uses the whistle too much, *etc.* Time and experience will cure this. (If . . . . . can improve those grades and get on the ball, I believe he would make an excellent teacher of physical education.)

**Case 4**

MARCH 12, 1958

*Strength:* Excellent in knowledge of subject matter (music) and, with experience, he should get this knowledge across to the students. This young man should be an excellent teacher—(music director).

*Needs to improve:* He should learn to get down to the beginning-student's level—and gradually build up the student. This will come with experience.

MAY 1, 1958

*Strength:* Mr. . . . . is very interested in teaching and is very willing to take suggestions and try to carry them out.

*Needs to improve:* He is a little shy by nature. Should be a little more outgoing.

**Case 5**

MARCH 12, 1958

*Strength:* The children liked her at once and responded well to her guidance. She was extremely interested in the core program, also a very thorough worker.

*Needs to improve:* A freshman may have trouble in knowing what to ask. However, she could have asked for more help and ideas. This will perhaps come later.

MAY 1, 1958

*Strength:* Has the feeling for teaching. Surprising in a college freshman. By her oral comments, she shows excellent understanding of seventh-grade level; by her written comments when correcting test papers, she shows ability to point up weak spots in exactly the right way.

*Needs to improve:* Needs to assert herself more—make herself felt more—sometimes appears too hesitant (perhaps just shyness)—has a quiet personality.

**Case 6**

MARCH 12, 1958

*Strength:* Excellent background in subject matter. Enthusiastic—takes suggestions well.

MAY 1, 1958

*Strength:* Cooperation—desire to do the best possible.

*Needs to improve:* Immaturity in many teacher qualities. Always must be aware that he is a mature leader.



Project teacher and teacher trainee plan together as they work in a ninth-grade science class in Highland Park Junior High School in St. Paul.

**Case 7****MARCH 12, 1958**

*Strength:* His excellent character gives him a wonderful perspective on the achievements possible in the field of speech. Excellent judgment and values.

*Needs to improve:* He has a tendency to do the minimum hours required—this may be his extreme conscientiousness in college studies. I know he studies long hours and foregoes pleasures many times.

**MAY 1, 1958**

*Strength:* This lad has much potential and there should definitely be ample opportunity for his ambition and subject knowledge.

*Needs to improve:* Only in the area of further study in his field, both education and speech. He is well on his way to the goal.

**Case 8****MARCH 12, 1958**

*Strength:* . . . . . shows remarkable sensitivity and insight, as well as complete willingness to do what ever she is able to do.

*Needs to improve:* As for improvement, . . . . . seems to have developed personality-wise, as she has great confidence. She need to improve in the area of displaying initiative and friendliness toward the students.

**MAY 1, 1958**

*Strength:* She has a fine attitude towards the teaching profession. She has an excellent grasp of the subject matter.

*Needs to improve:* . . . . . is shy, but she will overcome this small problem.

**Case 9****MARCH 12, 1958**

*Strength:* Mr. . . . . . is an intelligent, cheerful, apt, mathematically inclined student, who is interested in children and mathematics. He takes directions well, and is a willing worker.

*Needs to improve:* Mr. . . . . . is lax in keeping appointments, but is prompt in performing assigned duties.

**MAY 1, 1958**

*Strength:* (No statement)

*Needs to improve:* . . . . . does not have the necessary drive to complete college at the present time. Potentially, he has ability, but he did not use it. . . . . only completed eight out of the required eighteen hours for me.

**Case 10****MARCH 12, 1958**

*Strength:* I did not see enough of . . . . . to make any honest favorable comments here. He did not spend the specified sixteen hours with me.

*Needs to improve:* Dependability—he did not faithfully come to Johnson High School the required number of times on Tuesdays and Thursdays. Improvement also needed in knowledge of subject matter and his willingness to work.

Cases 9 and 10 are typical of the trainees who lost interest and failed to measure up to the requirements of the program. They are included here so that one will get a complete picture of evaluations including the ones for the successful teacher trainees and the ones for the unsuccessful teacher trainees.

#### *Student Evaluation of the Laboratory Experiences in the St. Paul Schools*

Since the teacher trainee is the most important person in the experimental program, it seemed entirely reasonable to determine how meaningful the project had been to him. This would also give some insight into the thinking and philosophy of the student himself. The consultant explained very clearly that this was to be a sincere, forthright, frank appraisal. The consultant and the advisory committee would use any criticisms and suggestions to strengthen and improve the program for the following years.

Giving the fullest consideration to the very human and understandable trait of young people to want to appear well-adjusted in the eyes of their supervisors, the evaluations were mature, helpful, and delightfully sincere. Many interesting points were discussed in these papers, ideas long known by good teachers everywhere and in every generation, but to these young people new and revealing experiences.

In this report, we shall enumerate and discuss the major points brought out in the evaluation of the laboratory experiences learned in the St. Paul Public Schools.

- I. Most of the cadets observed that there is more than one way or approach to being a good teacher. In fact, they were impressed by the various methods different people used.

"Of the things I learned from these observations, one sticks out above the rest. It is the fact that there is more than one way to teach. In fact, there are as many ways to teach as there are teachers."

Over and over, the idea is expressed and appears to be an important step in the student's growth—this knowledge of individual differences among the teachers as well as the students. It's true the trainee had probably unconsciously observed this in high school, but his awareness of teaching methods was probably much less alert.

- II. The enthusiasm of the teacher determines the attitude, cooperation, and enthusiasm of the class. As one person aptly expressed it—"This person-to-person teaching" seems to make the difference between a lively, animated, superior classroom and a stilted, average classroom."

"We students respected and liked this teacher because he was

enthusiastic, knew what to do, and how to do it. This interested and challenged them."

"Some teachers have a communion with their students, the art of arousing their interest and enthusiasm."

- III. Practically all the trainees seemed concerned about the mastery of subject matter. It was apparent to them for the first time that the teacher should not only know how to teach, but that he must know what to teach.

"I have already learned that the first two years is altogether too brief a period to do more than touch the surface of the academic field and a wise student must learn as much as he can."

Again and again the trainees refer to this idea. Somehow this year in the classroom seems to have given them more respect for the mastery of the subject matter they will teach. They are beginning to realize that, to be a really confident teacher, one must continually study and learn. The adolescents whom these cadet teachers have met this year have evidenced a curiosity and quest for information which has alerted the trainees to the need for concentrated study. They must not only know more than the students; they must also know a great deal more.

- IV. Because each trainee worked with more than one teacher, he was able to evaluate the differences in school equipment and cultural background of the students. Many of the trainees expressed their admiration for the teacher who improvised and accommodated himself to the material available.

"By seeing these two schools, I was able to observe that the job of the teacher requires him to improvise with the facilities available. I recognize this as a challenge, not as a handicap."

- V. Since the initial visits were to the junior high schools and since many of the cadets worked in the junior high schools, a majority of the trainees commented on the place of the junior high school in the educational program. They seem to feel that the junior high school serves a very vital need in the pupil's life.

"These schools present a challenge as they have revolutionized their curriculums to meet the problems of different student levels."

"My impressions of the junior high schools were favorable. The teachers and members of the staff were pleasant, understanding, and encouraging to the 'Green Recruit.' The young people were enthusiastic and cooperative."

- VI. Practically all of the trainees mentioned the exploratory value of the program as far as vocational choice is concerned.

"Certainly several of the students on the program saved time and money by being exposed to the classroom early. They really had an opportunity to decide."

"Most of the teachers that I have observed have inspired me to go on and teach because of the wonderful examples they have set. I think all educational people should observe in their first year to assure themselves that teaching is their vocation."

- VII. All of the trainees referred to their respect for positive and stimulating discipline. They were convinced that in a really fine classroom there was courtesy, order, and a feeling of good will. To these young critics, the good classroom was a place where students worked and learned and where teachers served as guides, instructors, and helpers. The cadets were particularly impressed by the different methods different people used to achieve this result.

In summation one might say that, on the whole, the trainees felt this first year most successful. Somehow they seemed to gain a more sympathetic understanding of the teenagers despite their proximity chronologically. Perhaps for the first time many of these people saw teachers as human beings with the same joys, sorrows, and problems as other people.

"I feel that we students on this program have quite an advantage over most students in education. I believe that a teacher's first day in a classroom is a frightening experience and that the poise and assurance we are getting now will be invaluable."

"I have found my observations in the St. Paul Schools a rich and enjoyable experience."

"I have more confidence in myself. I have gained more poise and the ability to get along with a variety of people. I take more interest in clothes and in my grooming."

Through all these student reactions runs the theme that for the first time the writers are viewing the teaching situation from behind the teacher's desk. Somehow they see the adolescent as the teacher sees him. They recognize the difficulties and the disappointments, but find them not nearly so important as the joy of teaching.

#### *Analysis of Trainees Self-Evaluations*

To glean more pertinent information about these young people participating in the program, each trainee was asked to write an evaluation of his personal growth and maturation during this first year. Needless to say, these were very revealing and very interesting. The reactions were serious and extremely frank. The trainee was asked to evaluate his growth academically, socially, and spiritually. There were such expressions of honest, earnest striving for personal betterment that one could not but be impressed and encouraged. These young people have a real purpose in life.

Scholastically, each trainee felt that he had come a long way. Everyone was certain he had learned to study and had acquired the habits of concentration and long hours of work. Most of the writers realized that time is important—and that one must learn to use it wisely.

"My study habits are improving and my parents are pleasantly surprised."

"I have learned not to agree with everything I read without first giving it discriminating thought."



"My two courses in chemistry and mathematics have shown me the great knowledge one must acquire to be a master of these subjects."

"Study is the key word for a successful college education."

"I feel that I have greatly increased my ability to organize and express ideas in both oral and written form."

All of the trainees sensed that college had given them new friends, more assurance and poise in meeting new people.

"In a school as big as the University, one needs a group. I have found more close friends than I had in high school."

"In high school I had a few friends; now I have many friends. I feel my greatest improvement has been socially."

Spiritually, trainees felt that college had made a contribution to their lives. No matter what college or what religion, that fact was very important to the student.

### *Suggestions for Improvement of the Program Made by the Trainees*

It would approach a Utopian dream to hope that in this experiment there would not be weaknesses—obvious after the first year to the student and the consultant. In the following paragraphs, we shall enumerate a few of these as gleaned from the student evaluations. Not all of these are criticisms; rather suggestions and observations:

- I. The laboratory experiences in the fall were so valuable that more time and consideration might be given to extend them over a longer period of time.

"I have come more and more to appreciate these first experiences of a general nature because this time gave us an opportunity to become familiar with the facilities, the staff, and the organization of the school."

This idea that the initial overview to several junior high schools was very important and could be extended over more time appeared popular with the trainee.

- II. Many of the trainees felt the tension of a tight schedule. They had to travel long distances and, of course, would like to work in a school close to the college. This, however, was merely mentioned. It did not appear to have great significance.
- III. A few trainees felt that two days a week did not give enough continuity. As one expressed it, "It was like coming in in the middle of a movie and leaving before it was ended."
- IV. Some of the evaluations indicated that, to many of the trainees, the seminars were as beneficial as the laboratory work. In the opinion of these cadets, the general knowledge of the adolescent and his behavior learned at weekly seminars made a marked gain in their approach to teaching. However, since these students will eventually receive a similar training in the college, it would not seem advisable to hold the seminars more than once a week.

One might attribute the definitely more positive approach of these student evaluations to various factors. Possibly the most logical reason is that by spring the cadets had become adjusted to college and to the high schools. In retrospect, the good outweighed the bad. Perhaps the trainees saw themselves a long way from the high-school graduates of 1957, and, like all good potential teachers, they did not let the clouds obstruct the sun.

A second factor could conceivably be that these young people have neither the training, the know how, nor the technical knowledge to criticize such a program. They were conscious of what they had gained; they knew little of what they had not. Undoubtedly the planning committee, the consultant, and the cooperating teachers from their vantage point of training and experience could see more clearly the areas for improvement.

#### *Consultant's Evaluation of Performance and Growth of the Teacher Trainees*

In general, the group made a good showing in growth in academic achievement. In all subtests of the *Cooperative General Culture Tests*, the group compares favorably with college sophomores using national norms. In general, the group did better than average in academic achievement as measured by academic marks and honor-point ratio. Based on project teachers' evaluations, the teacher trainees did a satisfactory job in most instances.

#### TEACHER TRAINEES LEAVE THE PROGRAM

Before the colleges opened their doors in the fall of 1957, three of the thirty trainees had left the program. By July 1, 1958, a year after the original thirty candidates were chosen for college, fourteen of the original thirty had left for one reason or another. The case histories help tell the story. Early marriages, other vocational choices, poor academic achievement in college, financial need, lack of interest in the program, poor study habits—all help to tell the story. The story explains in part why there is a teacher shortage and why there will continue to be a shortage. To a certain extent, the story tells why scholarships alone are not the answer. For some, scholarships will help; for others they are not the solution. How to tell to whom to award the scholarships is another story and one we cannot answer at present.

*Marriages.* Three trainees, two young ladies and one man, left the program because of early marriages. Two of the marriages took place before college began in the fall of 1957. One marriage occurred in March 1958. In both instances where the trainees were young women, they would like to have remained on the program. The policy of the advisory committee is not to permit trainees to marry during the early years of the program.

*Moved to other geographical area.* One trainee left the program during the summer before college opened because she left the state and located in California with her mother and step-father.

*Other vocational plans.* Two clear-cut cases exist where trainees changed their vocational plans. In the one case, a young man decided to leave the program because of his desire to study for the ministry. In the other case, a young lady left the program because she entered a teaching order of Catholic Sisters.

Other vocational plans might be reasonably assigned as one of several causes in two cases. Both were young ladies. The one left the program at the end of the first semester. Lack of interest in the program, poor academic achievement during the first semester in college, interest in a vocational choice other than teaching (in this case playground supervision), long hours of work as a paid worker on a playground recreational program, plans for an early marriage all entered into her decision to leave the program. Certainly in this case, no one cause could be singled out; rather a multiple of causes would better explain her reasons for leaving. The second case was one where the young lady left the program to enter business and expressed a lack of interest in secondary-school teaching. This lack of interest did not become obvious to the project teachers or consultant during the first or second quarter in college, but appeared during her third quarter in college. Plans for a summer marriage which were not discussed may have been the most important reason added to a disinterest in returning to college.

#### *Poor Academic Achievement*

Four teacher trainees, all young men, left the program for failure to maintain respectable academic records, perhaps more than for any other reason. Two of the four were dropped by their colleges for poor academic achievement. A third left college at the end of the mid-semester of his second semester with a record of poor academic achievement. The fourth had a poor academic record, was placed on probation by his college, and, in addition, failed to perform the assignments required in his laboratory experiences in the high schools.

*Other causes.* In one case a young lady resigned for reasons that were financial and personal. Not living at home and getting no assistance except the financial help of the scholarship plus what she earned doing clerical work or as a maid, she decided the strain was too much. One must add that her first semester college marks were not satisfactory. Multiple causation may well be the easy answer here; surely there is no apparent single cause. Financial insecurity, excessive hours of work, poor college marks, living outside the home, with no help of any kind from the home—all help to explain the apparent failure. Perhaps there were others. One never will know for sure.

A second case, a young lady left college and the Teacher Recruitment Program before the end of the first semester. Lack of interest in the program and in college could be described as the reasons for leaving.

TABLE III. Teacher Trainees Leave the Program  
Fourteen Leave During First Year

CODE NO.	SEX	COLLEGE	REASONS FOR LEAVING
1. 0471	F	*	Mother and step-father moved to California. Trainee went with them. Did not enter college.
2. 4726	M	St. Thomas College	Failure to succeed in college. Lack of interest in college. Lack of interest in the program.
3. 1158	F	Macalester College	Financial difficulties. Poor college marks. Lack of interest.
4. 1336	F	Hamline University	Married. Dropped from the program.
5. 1595	F	College of St. Catherine	Resigned. Entered a teaching order of Catholic Sisters.
6. 1621	M	Macalester College	Dropped from college. Poor academic record.
7. 1763	M	Hamline University	Dropped from college. Poor academic record.
8. 1899	F	Hamline University	Lack of interest in college or the program. Left college during first semester.
9. 5024	M	Macalester College	Resigned. Plans to study for the ministry.
10. 2446	M	*	Married. Resigned from the program. Did not enter college.
11. 2614	F	University of Minnesota	Resigned. Changed vocational plans. Lack of interest in secondary-school teaching. Did not return to college after first year. Plans for a summer marriage were not discussed, but were important no doubt.
12. 3593	F	*	Married. Dropped from the program. Did not enter college.
13. 4045	M	St. Thomas College	Placed on probation by the college for poor academic achievement. Dropped from the program because of lack of interest in the program or college.
14. 4359	F	College of St. Catherine	Lack of interest in the program. Poor college marks. Other vocational plans. Left college at the end of the first semester.

\* Resigned from the program before entering college.

The median percentile rank of the group of fourteen who were awarded scholarships but who did not continue into the second year was compared with the median percentile rank of the corresponding distribution of data for the original thirty trainees. The group of fourteen who did not continue appears to be lower with respect to abilities in mathe-

TABLE IV. Summary of Objective-Type Data—Thirty Trainees in Contrast to Fourteen Who Left Program

Factor	30 Cases	14 Cases
	Median Percentile Rank	Median Percentile Rank
1. High-school rank	94	83.5
2. IQ from Otis Test	119	114.5
3. American Council on Educ. Psych. Test—Total	82	79
4. Differential Aptitude Tests		
a. Verbal Reasoning	85	70
b. Numerical Ability	85	59
c. Abstract Reasoning	87	80
d. Space Relations	77	68.5
e. Mechanical Reasoning	68	41
f. Clerical Speed and Accuracy	80	88
g. Spelling	74	58
h. Language Usage	70	41
5. Cooperative English Test		
a. Mechanics	63	49
b. Effectiveness	67	65
c. Total	69	56.5
6. Iowa Tests of Educational Development		
a. Social Science	79	74.5
b. Natural Science	76	71
c. Language	75	61.5
d. Mathematics	80	68.5
e. Reading-Soc. St.	81	76
f. Reading-Nat. Sci.	81	82
g. Reading-Literature	77	80
h. Vocabulary	88	80
i. Total of above	85	83
j. Use of Sources	84	80
7. Cooperative General Culture Tests		
a. Social Studies	50	55
b. Literature	55	50
c. Science	50	42.5
d. Mathematics	60	52.5
e. Fine Arts	50	45
f. Total	55	47.5
8. Minnesota Teacher Attitude Inventory	48	

matics, spelling, language usage, vocabulary, and academic performance in college. The group of fourteen appears to be higher in clerical speed and accuracy. In general, one would conclude, that, on the whole, the original group of thirty is a slightly superior group compared to the group of fourteen. Both groups are above average. Neither group in terms of the median percentile scores could be interpreted as average or below average.

#### *New Trainees Are Selected*

Twelve trainees began the program for the first time when the colleges began their academic year in September 1958. These twelve are replacements for trainees who left during the academic year 1957-1958. A total of fifteen of the original thirty have left the program, three having left before they actually entered college plus twelve who left

during the academic year 1957-58. Table V summarizes the data for the twelve trainees. The median percentile high-school rank is 89; median IQ score from the *Otis Group Test* is 122. The *American Council on Education Psychological Test* total is 81.5 percentile. The median scores on the *Cooperative General Culture Tests* are above the 80 percentile on all five tests and above the 90 percentile in two of these tests. The 96 percentile is the score for the total of all five tests. Considering the fact that these twelve teacher trainees have finished their first year in college and comparing their scores to sophomore college norms in the *Cooperative General Culture Tests*, the group is a superior group academically based on these tests.

TABLE V. Summary of Objective-Type Data  
Twelve New Trainees

(Percentile Rank)

Code No.	High-School Rank	IQ from Otis Group Test	American Council on Educ. Psych. Test	Cooperative English Test Total	Cooperative General Culture Tests					
					Social Studies	Lit.	Science	Math	Fine Arts	Total
5801	88	116	72	84	79	82	92	99	30	96
5802	91	115	86	83	99	30	50	75	75	79
5804	41	132	80	36	70	45	90	75	55	75
5806	60	107	76	72	55	96	92	99	82	98
5808	95	120	96	94	98	55	94	99	55	96
5810	94	132	96	57	99	99	96	94	93	99
5803	100	132	99	92	85	88	79	99	82	96
5812	76	115	72	47	98	85	99	92	93	98
5814	—	124	92	—	88	55	92	55	85	85
5805	89	125	83	87	88	96	55	79	82	88
5816	88	124	76	69	99	99	98	82	93	99
5807	98	115	93	92	65	70	97	92	55	88
Median Rank	89	122	81.5	83	88	83.5	92	92	82	96

#### Plans for 1958-1959

Thirty trainees were on the program in the fall of 1958—twelve are new to the program and eighteen have completed one year on the program. These thirty trainees are enrolled in four colleges in the metropolitan area of St. Paul and Minneapolis. The thirty trainees have listed the following areas of concentration as likely teaching fields: English (Speech), 9; Mathematics, 6; Science, 6; Social Studies, 4; Music, 2; Core, 2; and Physical Education (Girls), 1.

The teacher trainees will spend approximately 125 hours in laboratory experiences in the public schools in comparison to 50 hours spent in the laboratory experiences during the first year. The trainees will average approximately 5 hours per week in the laboratory experiences.

The teacher trainees will spend approximately 25 hours in seminars. These seminars are conducted along lines similar to those of the previous year. They are one hour in length and are distributed over the academic year from September to May. The seminars implement and supplement the laboratory experiences. Topics covered will include: (1) records used in the St. Paul secondary schools; (2) audio-visual equipment and its use; (3) elementary statistics—its classroom use; (4) the high-school curriculum with an appreciation of resource units, guides, courses of study in a particular curricular area where the trainee plans to teach; and (5) the use of television as an aid in teaching with emphasis on production of classroom programs.

#### *Workshop Summer 1958*

Forty-six teachers attended the second annual Teacher Recruitment and Teacher Utilization Project Workshop on August 28 and 29; thirty of the forty-six teachers had attended the workshop of the previous summer. The group was representative of many fields of teaching. The recommendations of the various groups had a certain consistency. Too, the recommendations showed a familiarity with last year's recommendations and showed a maturity that was the result of having worked on the project for over a year.

The teachers who attended the workshop seemed to recognize their responsibility to the trainees. The teachers sensed the responsibility they had to assist the colleges in teacher education; they also sensed their responsibility to utilize the services of the teacher trainees later when the trainees would be trained sufficiently. Specific tasks were spelled out that trainees could perform this year and next year. The teachers tried to classify these work experiences in a manner so that they would be sequential. The teachers who are teachers in the public schools asked that meetings be arranged with college instructors in teacher education so that they could mutually arrive at areas where the high schools could work and areas where the colleges could work.

#### *Mathematics and Science Teachers*

The mathematics and science teachers made these recommendations at the close of their 1958 workshop: (1) The trainees should be taught certain evaluative activities such as checking workbooks and daily quiz papers. (2) The trainees should be taught to prepare certain materials such as being able to duplicate guide sheets and prepare science demonstrations. (3) The trainees should be taught to work with small groups of pupils on drill material or with pupils who were absent, teaching materials which the pupils missed during their absences. (4) The trainees should be taught to operate audio-visual equipment. (5) The trainees should be taught to maintain equipment in science laboratories. (6) The project teachers realize that the trainees are college sophomores and that their activities will be limited in scope. The project teachers do not expect efficient teacher utilization aspects to be effective before the fourth and fifth year of the program.





Project teacher and teacher trainee work together in an eighth-grade core class in Cleveland Junior High School in St. Paul.



Teacher trainee works in an eighth-grade music class in Marshall Junior High School in St. Paul, under the supervision of her project teacher.

### *Music Teachers*

The music teachers made these recommendations at the close of the same workshop: (1) The trainees can be trained to file music and mend music. (2) The trainees can be trained to arrange attractive bulletin boards. (3) The trainees can be used to collect money for symphony tickets and operetta tickets. (4) The trainees can assist back stage with production, make-up, and prompting. (5) The trainees can assist in the handling of robes and uniforms. (6) The trainee can learn to seat for tone qualities. (7) The project teachers can develop the trainee's ability to understand what teaching music means. The project teachers urged that they have an opportunity to meet college faculty members who are working on the program so they can discuss mutual problems in teacher education.

### *Core Teachers*

The core teachers made the following recommendations: Teach the trainee skills necessary so he can: (1) gather confidential information concerning pupils and learn to use the information; (2) learn to find resource information for units of work; (3) learn to work with small groups of students; (4) learn to use audio-visual equipment and materials; (5) learn to recognize individual differences in pupils and learn to teach to meet the needs of these different abilities. Trainees can best learn this by: (6) working with small groups; (7) spending time in observation; (8) keeping a diary and record of the activities he does for the project teacher; (9) learning clerical skills in the seminar so he is competent to do routine clerical work when he comes to the project teacher; and (10) being taught to arrange an attractive bulletin board.

### *English Teachers*

The English teachers made the following recommendations: (1) Provide time so trainee and project teacher can hold conferences, and so that he will make every effort to confer with his supervising teacher in advance of the class period. (2) Maintain a journal, open to both the trainee and the supervising teacher; in the journal he should keep a log of his laboratory experiences with a particular supervising teacher. (3) Acquaint the trainees with forms used by the teachers for record keeping purposes. (4) Teach the trainee to work with small groups in the classroom and teach them the specific skills they will need to develop to accomplish the learning that is intended.

### *Social Studies Teachers*

The social studies teachers made the following recommendations: (1) Teach trainees to operate audio-visual equipment, and to select and preview films. (2) Teach them to use the school library as a source of materials. (3) Teach the trainees discussion techniques. (4) Teach the trainee to assist in the correction of papers.

## CONCLUSION

The St. Paul Teacher Recruitment Project has completed the first year of a five-year program. We are in the second year during the present academic year 1958-1959. To date, recruitment and teacher education have been our main goals. The offering of scholarships to able high-school graduates who are considering secondary-school teaching is not a clear-cut, definitive answer to the teacher shortage. It has been clearly demonstrated that, in the St. Paul Teacher Recruitment Project, the attrition of teacher-trainees during the first year of college is high in spite of careful selection and careful supervision of the teacher trainees. For some high-school graduates who are potentially good risks academically, scholarships help answer the need for teachers in a period of teacher shortage; for other high-school graduates who seem to be equally good risks, scholarships are not the answer. The project is not finished; final answers are not available at this time. But one would have to conclude that the recruitment stage was one that demonstrated that scholarships will bring some teachers into the profession, but that scholarships will be no guarantee that most scholarship winners will remain in college and become teachers.

Teacher education and teacher utilization are phases of the program that are ahead. There are insufficient findings to permit generalization at this time.



A Snyder, Texas, business secretary, borrowed for an hour, works with a discussion group in eighth-grade English as one member of the teacher-team supervises. Students meet with other students (Phase 3) working on similar problems to use the things they have learned in large classes (Phase 1) and on their own (Phase 2). Longer than usual learning units permit some students to function in more than one group.

## **Snyder, Texas, Redeploys Students To Improve Staff Utilization**

PALMER O. JOHNSON  
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DELL FELDER

### **PROGRESS REPORT AND PLANS FOR 1958-59**

THE original purpose of the Snyder Utilization Project was to test promising ways of improving instruction by increasing teacher effectiveness. Teams of teachers were freed from the usual schedule in order to be allowed time for planning lessons for students who were grouped according to the immediate requirements of the teaching-learning process as conceived by each team. This called for less repetition on the part of the teacher; therefore, less actual classroom time. The time saved from the usual classwork was spent with students and teachers in other aspects of the teaching-learning process.

In general science, for example, this meant scheduling at a given period as many students as course requirements, laboratory and classroom facilities, and personnel would permit. At the beginning of the experiment and until the curriculum was reorganized and teaching techniques and materials were developed, a sufficient number of teachers was available to handle these students when the teaching-learning process demanded small groups and individual meetings. Eventually, there was to be redeployment of teachers and pupils in order to justify financially the hiring of clerks, the purchasing of special equipment, and providing teachers with preparation and planning time.

Problems facing the project at this point indicate that future plans aimed at achieving the original purpose must take into account three criteria.

1. Selection of personnel in terms of ability, interest, and willingness to work.
2. Adaptation of the existing schedule to meet the unique demands of the project.

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3. The climate for experimentation in the school and community and its effect on the progress of the project.

These criteria were not fully satisfied in 1957-58. How well these problems were solved will never be known fully; however, in subjective terms, teachers feel students have assumed more responsibility for their own learning than would be expected normally. A hint of proof of this can be obtained from observer's reports. Another indication of the accurateness of this subjective evaluation is in the increased use of the library and its facilities. Standardized tests reveal tentatively that students in large classes learned at least as many facts as students in small classes. An opinionnaire reveals that students in large classes have more definite plans for the future than do students in small classes. Thus, teachers can feel secure in the knowledge that students in large classes have received a fair measure of instruction.

#### ANALYSIS OF EXPERIMENTAL FINDINGS — 1957-58

The comparative experiment underway in the Snyder Schools briefly is "to test the hypothesis that teaching of students in large groups; making use of mechanical technology including television, radio, tape recorders, and over-viewers; and capitalizing on teacher-pupil planning of learning experiences for individual and small group effort in unit-type activities are more economical and more productive educationally than traditional methods of teaching in the secondary school." By traditional methods in this case is meant those methods associated with classes of 20 or 25 students. The experiment was designed to contrast one approach to the teacher-learning situation with another, each at its best. In order to satisfy the conditions of repeatability and to provide a basis for interpreting the results, a detailed specification covering the procedures for each of the two treatments was prepared. The details cannot be presented here, but, for brevity and convenience, we shall refer to the two contrasted treatments as the large *vs.* the small class.

It should be understood, however, that the difference between the sizes of the classes is not the experimental variable of interest. Likewise, we are not considering here the factor of costs, although this factor is under investigation. For example, a quantitative procedure is under development to amortize equipment costs, to disallow abnormal initial cost, and to establish comparative per pupil costs for the instructional systems under comparison.

We wish to emphasize the fact that it is necessary for teachers to gain experience with a new instructional program before it is subjected to a comparison with a program with which they have had considerable experience. Thus the crucial experiment reported here is for the academic year 1957-58 in the fields of English, general science, and biology. All participating teachers had had a year or more experience with the large-class program.

For each teacher in each class situation, we began our statistical analysis by determining first whether the class as a whole achieved a significant growth over the experimental period. For this determination, it was necessary to give the test at the beginning and at the end of the experimental period. For each student of a class, the initial score was subtracted from the final score—the difference is designated as a gain or loss. The mean gain (or loss) of the class as a whole was then calculated. For determining whether the gain or loss was statistically significant, the appropriate test of significance was applied; viz., the t-test.

One further useful analysis based on the above data was to determine if the class became more or less variable by the end of the experiment as compared with the beginning. If students are separated more widely, the implication is that the particular instructional practices served to adjust to individual differences better as compared with less adjustment to individual differences when the variability was reduced.

Another useful technique of analysis is the analysis of covariance. This technique makes it possible to adjust the criterion for inequalities among groups with respect to initial differences that might introduce bias in the experimental results. In our analysis, for instance, we have adjusted the final scores for such inequalities that exist among the groups in scores on the initial tests.

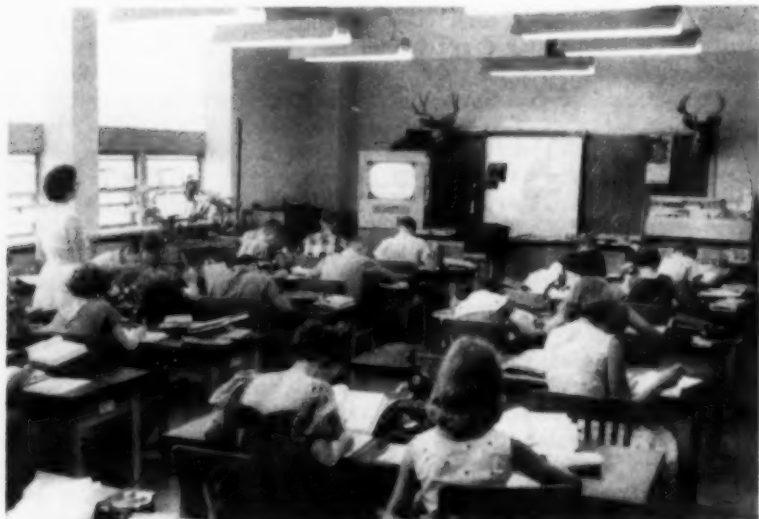
Another contrast between the treatments relates to the retention of the outcomes measured. These measures are not now available since the examinations measuring retention were not given until the beginning of the present school year. These data will enable us to determine what has happened during the summer vacation. Do the conditions found at the end of the school year remain the same after an interval of three months? This is an important aspect of the evaluation program.

#### ACHIEVEMENT IN ENGLISH

The two measuring instruments used in this experiment were: the *Cooperative Mechanics of Expression Test* and the *Cooperative Literary Comprehension and Appreciation Test*. The three administrations were as Pretests in September 1957, as Post- or After-Tests in May 1958, and as Retention Tests administered in the fall of 1958.

Experimental data were collected for two situations: (1) *Teacher 1* taught one large and one small class; and (2) *Teacher 2* taught two large classes and one small class.

*Situation 1.* We present the analysis separately for each situation. Our first analysis was to determine whether or not there had been a significant improvement in the abilities measured by the *Mechanics Test*. The basis for this analysis was the mean of the differences between the pre- and the after-test. There was found to be a significant mean gain for both the large and the small classes. (Descriptions of these and subsequent statistical analyses have been deleted from this report in the interests of brevity.)



After ten minutes of television instruction beamed to several lab classes in Snyder, Texas, the TV teacher returns to one of the laboratories to work with students as they learn about the microscope.



A typical large class session in Snyder, Texas. TV, rear-projection equipment, a magnetic board, and a large viewing screen have been arranged in a panel located three feet from the front wall.



The next outcome of interest was to note if there was any significant change in variability among the students subsequent to instruction. The answer to this question is obtained by testing the significance of the difference between the variances of the scores on the pretest and on the after-test. It may be concluded that there was no significant change in variability at the end as compared with the beginning of instruction.

A similar analysis carried out on the measurements obtained from the administration of the *Literary Test* indicated that a significant mean growth (at the 5 per cent level) was not attained in the small class. The situation was reversed relative to changes in variability. There was a significant increase in variability in the small class. The results indicate that the small class instruction made greater adjustment to individual differences.

The detailed contrast between large and small classes is observable. For the group as a whole, the mean achievement of the small class was 94.3; of the large class, 89.0. By ability levels the mean of the high ability group in the small class was 118.8; that of the large class, 102.0. Only the mean of the middle ability group in the large class exceeded that of the small class. It was found that there was no significant difference between the mean of the large class and the mean of the small class. There was a significant difference in achievement among the ability groups.

The observed values indicate a higher mean post-score for the large classes except for the high ability group. However, upon application of the analysis of variance and covariance and of the multiple range test, no significant differences were found in achievement as measured by the *Literary Test* between the small and large classes for *Teacher 1*.

*Situation 2.* We report in summary form the principal findings and inferences based on the statistical analysis for English taught by *Teacher 2*. The analysis was more elaborate and more information was secured in this situation since this teacher taught under two large class arrangements and one small class arrangement. The experimental results for the three classes were examined simultaneously.

Turning first to the accomplishment of each class independently, it can be said that there are significant gains for both large classes and the small class on the *Mechanics Test*. With respect to the outcomes measured by the *Cooperative Literary Comprehension and Appreciation Test*, significant growth was observed for only one of the large classes and for the small class.

For none of the three classes was there a significant change in variability during the experimental period on the *Mechanics Test*. However, there was a significant increase in variability on the *Literary Test* for the same large class that gained in mean achievement and for the small class.

Analysis of variance of the over-all treatment means on the *Mechanics Test* with the inequalities on the pre-test controlled by the analysis of covariance and with the appropriate F-tests led to the conclusion that

the mean achievement of large Class 1 was significantly larger than that of large Class 2. The adjusted mean achievement on the *Mechanics Test* of the small class did not differ significantly from that of either large Class 1 or large Class 2.

#### ACHIEVEMENT IN GENERAL SCIENCE

The *Cooperative General Science Test* was used to measure achievement in ninth-grade General Science. The test was administered as a pretest in September, 1957, a post-test in May 1958, and administered again in the fall of 1958 as a retention test.

There were two large classes and one small class involved in experimental comparison. There were 54 students in *Large 1*, 57 in *Large 2*, and 18 in the *Small Class*. The same instructor taught all three classes.

We can summarize with only slight amplification the experimental evidence. We shall begin with the two-way classification of means by treatment and ability level. Although the gains appear small, they were found to be significant for each of the three classes. Changes in variability were significant at the 1 per cent level for *Large Class 1*, at the 2 per cent level for *Large Class 2*, and just slightly above the 5 per cent level for the *Small Class*.

Analysis of variance and covariance and the appropriate tests of significance revealed that the mean achievement of the *Small Class* was significantly higher than that of both the *Large Classes 1 and 2*. The mean achievements of the larger classes were not significantly different.

The only difference between adjusted means of interest found to be statistically significant was the difference between the low ability groups of the *Small* and *Large Class 1*. The difference was in favor of the *Small Class*.

#### ACHIEVEMENT IN BIOLOGY

The second science included in the comparative experiment was Biology. The test used to measure achievement was the *Cooperative Biology Test*. It was administered in September and in May, and again in the fall of 1958.

The experimental comparison involved two large classes and one small class. Each class contained 39 students and the small class was comprised of 18. The same instructor taught both the large and small classes.

Here, as we noted in General Science, the absolute gains over the experimental period are small for each class and sub-class. However, in each of the two large classes and in the small class, there was a statistically significant increase in the mean of the post-test over that of the pre-test.

There was no statistically significant change in variability in either *Large Class 1* or *Small Class*. There was, however, a significant increase in variability (variance) for *Large Class 2* indicating greater adjustment to individual student differences than in the other two classes.

Consider now the evidence on differential effects of the two large and small classes. Application of the analysis of the variance and covariance, making adjustments for inequalities in the pre-test scores, led to the conclusion that there were no statistically significant differences in mean achievement among the two large and one small class.

#### THE 1958 SUMMER WORKSHOP

On July 28, a dozen creative and hard-driving teachers and assistants met at Snyder High School to transform what has been learned in the past two years from the Staff Utilization Project into four concrete programs for the coming school year. The programs are:

*English, reading, and spelling:* a full-year eighth-grade language arts course of studies in which a student actually uses material that he has learned from both large-group lectures and by studying in the classroom under the guidance of his teacher who encourages him to take more and more responsibility for his own learning.

*General Science:* a reorganization of the material to be taught, and the development of new and flexible plans for improvement of instruction in large groups, regular classes, and discussion groups.

*Biology:* a detailed study of the subject matter with special emphasis on the preparation of visuals to enrich learning.

*Spanish:* preparation and integration of a set of tape recordings to teach beginning Spanish.

Every morning except Sunday, and until at least four o'clock, the workshop met in the high-school Materials Center for team planning and preparation of lessons and visual aids. Teachers and assistants labored over research books, typewriters, mimeograph and duplicating machines, tape recorders, filmotype machines, drawing boards, transpaque projectors, and diazo and reflex equipment for developing transparencies.

All four programs, although not complete, are ready to go. The teachers admit they need more workshop time, but they were able to complete the first nine weeks of work for the coming year in minute detail. The subject matter for the entire year was organized, and they made lesson plans and visuals on many things to be taught during the remainder of the year. They hope to find time enough by working late afternoons and at night after school starts to keep ahead of their classes.

It is their unanimous opinion that workshops such as this should be made available during the summer for all teachers. Also, they believe teachers should be provided sufficient time during the school day to prepare a lesson properly to teach students. They know how many hours are required to plan and make a visual aid to teach a single idea that boys and girls need to know. For instance, one elaborate visual aid made by two teachers this summer required 30 hours to prepare using special equipment in addition to the usual teaching supplies. This visual, however, will be used with slight revision for the next ten years; thus the cost becomes reasonable and the instruction is improved enormously.

The Snyder Staff Utilization Project is a creative search for concrete improvements in the quality of instruction. It aims not at theorizing, but at specific changes—results count.

In order to attain results, interested teachers have been provided with secretarial assistance, special materials, a summer workshop, and a measure of relief from the usual teaching schedule. Those teachers who are interested in using different approaches were encouraged to do so by becoming a part of the Staff Utilization Project. The teachers in the project are searching for answers to instructional problems that continue to face teachers and students every day. The end product of their work will mean that all teachers—here in Snyder and elsewhere—will be better off professionally. Students will benefit as a result of improved instruction.

Although the Snyder Staff Utilization Project deals with new approaches to teaching and learning, it is not experimental insofar as what the students are taught. Improvement of instruction is the aim. To what extent that it has been blessed, Snyder has a particular responsibility and opportunity to search out the answers to many.

#### **Instructional Materials Center at Snyder High School\***

During 1957-58, the Snyder Public Schools initiated the development of an Instructional Materials Center which had for its primary purpose to help teachers increase instructional efficiency by enriching course offerings through the use of a variety of carefully selected instructional aids. An extensive pamphlet file has been developed which includes materials covering a wide range of topics. Catalog files have been set up to assist teachers in locating sources for specific materials. A card catalog on films, including a synopsis of titles, is now available. The Center has provided assistance in the purchase and distribution of expendable materials used by teachers in the development of instructional materials. In addition to these services, professional books and magazines have been provided for teacher use throughout the school year.

These efforts represent only a beginning in the development of the full potential of an Instructional Materials Center in the Snyder Public Schools. The centralization of materials, if fully understood and utilized by teachers and administrators, should provide increasing service to teachers and result in a more effective instructional program for all students. This report is presented as an analysis of the operation and use of the Instructional Materials Center during the school year of 1957-58.

#### **SELECTION AND COLLECTION OF MATERIALS**

The selection of materials for use in the instructional program of any school is partially creative in nature in that materials convey ideas,

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\* This portion of the report was written by Dell Felder, who is in charge of the Instructional Materials Center at Snyder High School, Snyder, New York.

attitudes, facts, aesthetic appreciations and provide significant vicarious experiences. Materials were selected for the Snyder Instructional Materials Center according to the degree of their ability to enrich the instructional program. Care was exercised to prevent, insofar as possible, the collection of unusable materials. Items were selected which seemed best related to the Snyder curriculum and suitable to the teaching methods and purposes of this school.

Among the materials collected and cataloged for teacher use were pamphlets, commercial catalogs, professional literature, charts, posters, pictures, film synopsis cards, maps, and other expendable materials and state adopted textbooks. A catalog listing these materials was published in February of last year and a supplement was published March 26.

The pamphlet file contains more than 3,000 pieces of literature collected from a variety of sources and covering a wide range of topics. This material has been cataloged alphabetically by subject and placed in pamphlet boxes on bookshelves found on the north wall of the Materials Center. Catalog cards bearing the name of the subject and a listing of the materials available were placed in alphabetical order in the card file.

A large number of commercial catalogs were collected to assist teachers in requisitioning specific materials and equipment. Catalogs were arranged in alphabetical order in the vertical files under the following titles: Audio Visual Catalogs, Award and Trophy Catalogs, Book Catalogs—Textbooks, Equipment Catalogs, General Wholesale Catalogs, Map and Globe Catalogs, Novelty and Carnival Catalogs, Picture Catalogs, Supply Catalogs, and Teaching Aid Catalogs. Cards on each of these catalogs appear in the card file in an alphabetical listing by companies and an alphabetical listing under the various subject headings.

A collection of professional books and magazines was maintained throughout the year for teacher use. Certain educational bulletins were also available to teachers such as the weekly *National Geographic School Bulletin* and *Roadmaps of Industry*.

A glance at the first supplement to the Instructional Materials Catalog will indicate the versatility of available charts, posters, and pictures. Charts and posters were labeled and placed in storage areas. Pictures were filed alphabetically in the vertical file.

More than 240 film synopsis cards were collected and filed alphabetically in the card file. These cards contained information on each film title including the length of the film, source, subject area, a brief synopsis, suggested uses in the classroom, age level, comments on the technical aspects of the film, and a general rating.

Various expendable materials such as poster board, tempera paints, construction paper, etc., were stocked for use by teachers in developing instructional aids. Cartograph desk outline maps were also a part of this collection.

Some textbooks appearing on the state adopted list, but not in use in the Snyder Schools, were collected for teacher evaluation. These books were complementary from the textbook companies.

Among the factors considered in the collection of materials this year was cost. It was found that a wealth of materials is available to schools at moderate or no cost from various commercial and non-profit organizations. The source used most extensively for securing these materials was a catalog of *Free and Inexpensive Learning Materials* published by the Division of Surveys and Field Services of the George Peabody College for Teachers. No entry is included in this publication except those which have been examined and evaluated by the publishers, and with few exceptions, nothing was listed which cost over fifty cents. In evaluating materials the following criteria were considered by Peabody:

1. *Content*: accuracy of subject matter; freedom from exaggerated statements; well organized; of general interest.
2. *Timeliness of subject matter*: recent information, information supplementary to that available in most textbooks.
3. *Subject matter unbiased*: factual; clear-cut educational purpose; free from obtrusive advertising.
4. *Format*: easy to read, sight saving.

Another excellent catalog of this sort is published each year by Educator's Progress Service of Randolph, Wisconsin. The materials listed in this catalog, however, are primarily for use by elementary-school teachers; therefore, it was not used extensively in obtaining materials for the High-School Materials Center.

Various other publications listed sources of free and inexpensive teaching aids. Among these were several by Bruce Miller of Riverside, California, which included *Let's Celebrate a Holiday* (a source booklet on materials and information about holidays, festivals, and special observances); *Bulletin Boards*; *High, Wide, and Handsome*; *Sources of Free and Inexpensive Pictures*; and *Sources of Free and Inexpensive Teaching Aids*.

Commercial and non-profit organizations sometimes included in their shipments a list of available materials suitable for teacher use. These lists were filed and used to supplement material orders on specific topics.

Many times teachers requested specific materials they felt would be valuable additions to the Materials Center collection. These requests were honored whenever possible.

Commercial catalogs were requested directly from the companies from a list supplied by the Texas State Teachers Association.

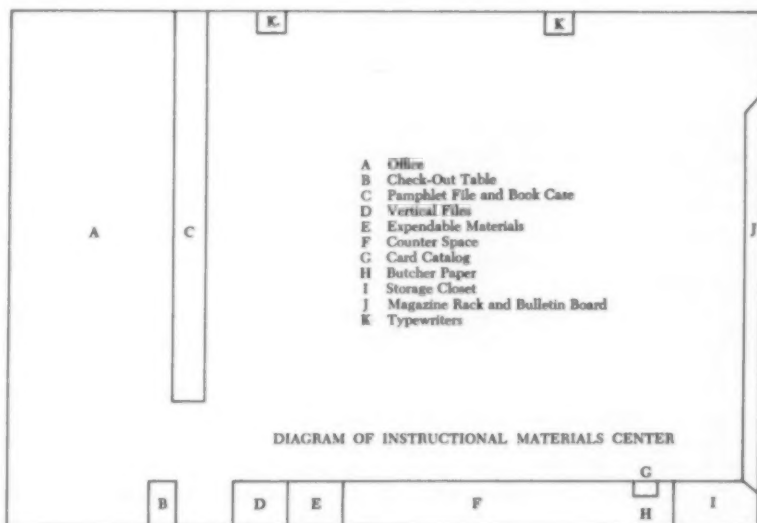
Orders for free materials were handled by form letter directly from the Materials Center. Materials which required an expenditure of funds were approved by the principal and requests were forwarded to the business office on routine requisition forms.

## ORGANIZATION, DISTRIBUTION, AND CIRCULATION OF MATERIALS

The diagram of the Instructional Materials Center which appears on the following page will indicate the location of the various materials available in the Center. As materials were received they were stamped RETURN TO MATERIALS CENTER, and then sorted as to general subject matter. One card was then prepared on pamphlets, charts, posters, and pictures which was filed alphabetically in the card file. These materials were then filed in the appropriate place in the Materials Center. Commercial catalogs required two cards, one by the name of the firm filed by subject matter and the second by the name of the firm filed alphabetically. Catalogs were filed in the vertical files, (D).

Expendable materials were listed in a special card file which provided a running inventory of these supplies at all times. These materials were placed on open storage racks in the Center, (E).

Professional literature, except educational bulletins, was either arranged on bookshelves or in the magazine rack for the convenience of teachers. Back dated magazines were stored in the storage closet indicated by "I" on the diagram.





Teachers were invited to check out any materials they felt would be of use to them. The card catalogs and the Instructional Materials Center Catalog provided a convenient listing of materials available and their location in the Center. In addition, someone was on duty to assist teachers locating various types of materials, or to provide information as to possible sources if the Materials Center did not stock the specific item requested. No time limit was established for the use of materials, but teachers were encouraged to return materials as soon as they had finished with them.

Check-outs for books, pamphlets, charts, posters, commercial catalogs, and pictures were recorded on cards which listed the items checked out, date, and teacher. These cards were checked from time to time and teachers who had held materials out for more than a month were contacted. This contact was not for the purpose of "hurrying teachers" with materials, but in order to remind teachers who may have forgotten to return materials they had finished using. As materials were returned, they were placed in their appropriate place in the Center.

Expendable materials as checked out by teachers were recorded on special cards developed for this purpose. These cards provided a running inventory of these materials by listing the amount purchased and the check-outs by teacher, date, and amount.

#### USE OF MATERIALS BY TEACHERS

It would be impossible, of course, to indicate in this report each contact made with teachers by the Materials Center this year. An analysis will be made of the use of expendable materials by teachers and the use of the pamphlet file. It is significant to note here that the Materials Center was not fully equipped to service teachers until about January 1, as the first few months of school were spent primarily in collecting materials from various sources.

Table I indicates the number of times the various types of expendable materials were used by teachers. These materials were used by teachers in developing certain instructional aids for use in their classroom.

The pamphlet file was used in various ways by teachers. Some teachers requested material in classroom quantity to be supplied for student use in various phases of the learning process. Other teachers checked out materials for their own use in preparing and presenting units.

The following statement, taken from one teacher who used more than 1,287 pieces of literature from the pamphlet file for two units of study in her classes, will give an indication of the use of this material.

The materials furnished my students were very helpful for an English research paper. The materials were current, plentiful, and interesting. Sixty students benefited from these materials. Time was saved for I was able to issue their material quickly, and no limit was placed on the return of it. The unit was "Let's Take a Trip." The students were able to get materials from all parts of the world. Points of interest, government, industry, people,

language, art education, and transportation were a few phases they stressed in their papers.

A vocations unit was given in English. Different vocational pamphlets, booklets, and papers were furnished for students. About two hundred and sixty-nine students shared in this material. The material was used for a theme that each student was required to write for a vocational notebook.

In addition to the material supplied, a very attractive bulletin board display was prepared by the Materials Center to introduce the unit. I also used various supplementary books available from the Materials Center as teaching aids.

TABLE I. Expendable Materials Used by Teachers

<i>Type</i>	<i>Amounts</i>
Brushes*	40
Cartograph Desk Outline Map	68
Chalk—Omega Colored	8 Boxes
China Markers	4 Boxes
Construction Paper	133 Sheets
Crayolas	2 Boxes
Crepe Paper	5 Packages
Drawing Paper	20 Sheets
Flannel Board Stand	1
Glitter	7 Cans
Glitter Glue*	7
India Ink	17 Bottles
Lettering Stencils	6 Packages
Lettering Stencils (Brass)*	11
Magic Markers	37
Manila Drawing Paper	21 Sheets
Manila Tag Board	4 Sheets
Masking Tape	1 Roll
Newsprint	8 Sheets
Pastello*	6 Boxes
Pen Points*	16
Pen Staff*	16
Poster Board	306 Sheets
Rubber Cement	7 Cans
Rulers—12 inch	3
Sand Paper	3 Sheets
Scissors*	15
Stylus*	17
Tempera Paint	22 Bottles
Thumb Tacks	2 Boxes
Window Shades	3

\* Indicates Returnable Materials.

### ROLE OF THE MATERIALS SPECIALIST

A good materials center is operated so that the materials needed are easily located and borrowed, and any services necessary for their effective use are freely available. The responsibilities for good administration lie with the materials specialist who is in charge of the materials center.

*Control of Materials.* The nature of the control of materials should be a means of stimulating and encouraging greater utilization of materials by all teachers for greater enrichment of the instructional program. The materials specialist must give attention to those aspects of organization which result in increased accessibility and continued evaluation of circulation procedures which facilitate the flow of materials. Studied use of detailed records by the specialist to discover future potential needs are ways in which routine practices can be employed to further the purposes for which a center is organized. The so-called routines should not represent ends in themselves, but should also serve the specialist in providing services which are needed by individuals or groups in attaining recognized goals.

*Identification of Sources of Materials.* The materials specialist should have access to the tools which will help him answer inquiries from teachers dealing with sources of materials. Lists, indexes, and catalogs that help to find answers should be found in the fully functioning center. In addition, the materials specialist's continued experience with these tools should make him a valuable resource person to teachers in locating what is needed.

*Selection of Materials.* It is the responsibility of the materials specialist to select materials for purchase from the wide variety produced. However, the involvement of teachers in the identification and selection of materials is basic to their acceptance and effective use in classrooms. A faculty committee, established for the purpose of reviewing the relative value of new teaching aids and instructional materials, could provide the specialist with a means of information as to teacher needs throughout the system.

*Acquisition of Materials.* Efficient acquisition is imperative to the well-ordered functioning of the center. A budget should be provided for the operation of the center and accurate financial records on purchases should be maintained. Orderly procedures for requisitioning materials should be established, and it should be a simple matter for the materials specialist to determine the status of any requisition or order at all times.

*Development of Visual Aids.* The materials specialist should be proficient in the techniques involved in the development of visual aids so that he can provide assistance to teachers in terms of "how to do it" rather than actually developing materials for teachers.

*Organization and Arrangement of Materials.* Some sort of classification system should be developed by the materials specialist which makes it easy and convenient for teachers to locate materials in the center. It is

important that persons using the center understand the classification system; therefore, an index to the resources available indicating where each piece of material is located is necessary. The card catalog is perhaps the most practical method of indexing. There should be as many card entries for each piece of material as necessary to identify it fully. A printed catalog of materials and services which are available should be published and distributed to teachers periodically so that they may review the various resources of the center.

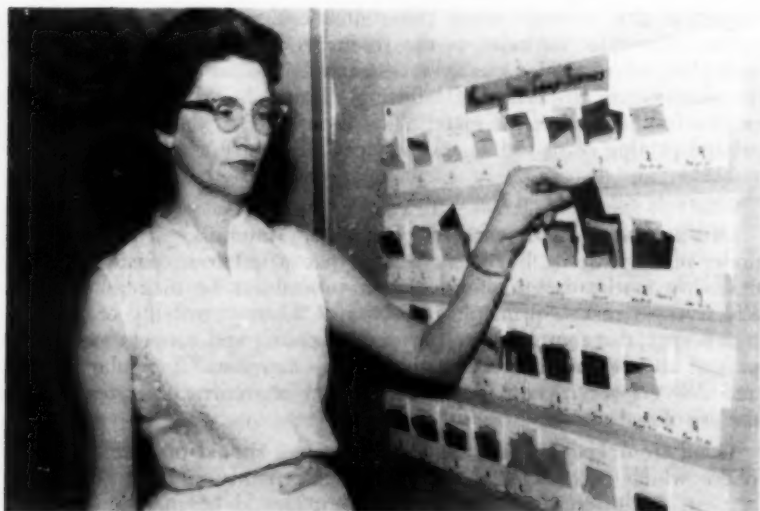
*Distribution and Circulation of Materials.* Materials can be circulated under many patterns, but it is essential that orderliness, consistency, and flexibility in the design of circulation procedures be maintained. The effectiveness of this principle is primarily the responsibility of the materials specialist, but requires full understanding and cooperation on the part of all who are involved in the center's activities. A regular pick-up and delivery service would provide greater convenience for teachers in the use of materials.

*Good Housekeeping Procedures.* The center should provide an atmosphere which encourages the feeling of informality and "at homeness." A neat, uncluttered, inviting environment should be maintained at all times.

*Well Recognized Policy.* It is a generally accepted theory that people better understand and carry out policy if they are involved in its development. The materials specialist should seek ways of utilizing the ideas of as many teachers and administrators as possible in the development of the over-all policies for the center. It is important that these policies be sound, workable, and geared to the basic philosophy of the center itself.

*Identification with the School Program.* One of the most serious responsibilities of the person in charge of the materials center is to see that it is completely identified with the school program. The materials center should reflect the educational goals and needs of the school. The materials specialist is responsible for contributing his talents to the adequate provision of various learning situations with the needs of a particular group of learners always in mind. At the same time, he must be able to see all phases of the school's program in their proper perspective to the whole.

*Human Relations and Interpretation of the Program.* The leadership role of the materials specialist calls for special aptitude in the field of human relations and he should have unusual ability to work with others. If it is assumed that a fully functioning materials center is designed to increase the effectiveness of the total instructional program, it becomes vital that the services of the center be fully understood by those teachers for whom it is established in order to assure maximum utilization. The materials specialist plays a significant role in the interpretation of the purposes, philosophy, and policies of the center. Various methods may be employed to interpret the program. Teachers may be involved in



Teams of teachers use a pocket chart as an aid in organizing subject matter into the four nine-week periods of the school year in Snyder, Texas. Each colored slip denotes a type of visual aid or learning activity to be employed when teaching the material selected for that week. This was one of the first things teacher-teams did in the summer workshop.



A clerk operating a filmotype machine solves the problem of lettering for visual aids. By doing all types of work outside the classroom, clerks relieve teachers in Snyder to concentrate on the instructional program.

various stages of planning and a long-range educational program designed to acquaint and keep teachers up-to-date with services and materials may be initiated. The materials specialist may seek opportunities to project materials into situations where they seem particularly well suited. Given proper impetus, an effective, well-developed program of service will soon become its own best salesman.

#### RECOMMENDATIONS FOR FUTURE STUDY

On the basis of the beginning made last year in the development of an Instructional Materials Center for Snyder High School, certain needs have become apparent. The following recommendations are made with the full realization that all of the changes cannot be made immediately. They are presented, however, in the hope that they may be helpful in the future administration of the Materials Center.

*Personnel.* During the past year no one has been on duty in the Materials Center during the afternoon. Two problems have resulted from this situation. (1) Teachers have been inconvenienced in locating instructional aids and have not felt free to borrow materials when no one was on duty. (2) In some instances materials were taken from the center without proper check-outs being recorded. This created problems in inventory and keeping up with materials on loan. It is recommended, therefore, that someone be present in the Materials Center at all times for the purpose of helping teachers locate and check-out materials.

*Location of the Materials Center.* The present location of the Materials Center is outside the high-school building. We cannot know, of course, to what extent this has handicapped teachers or curtailed the use of the Center. If at some future time, however, there is sufficient indication that the present location is undesirable, the following locations might be considered.

1. *Room 103*—This room would probably best serve the purposes of the Materials Center if it is decided to locate it within the building. There would be little cost in converting it into a Materials Center. The room also has the advantage of being well lighted, suitably arranged, and has sinks and running water.

2. *Teacher's Lounge and Bookroom*—The upstairs teacher's lounge and adjoining bookroom might be converted into a materials center. The lounge at the present time is not being used to a great extent. There would be some cost in converting these rooms, however, as the east wall of the lounge would probably need to be removed or else a doorway cut through it.

*Services.* An ever-expanding program of services is fundamental to the success of an Instructional Materials Center. The following suggestions represent only a few of the ways in which the Snyder Materials Center could better serve teachers.

1. *Improved Check-Out Records*—Improvement should be made in present methods of recording check-outs to teachers. Records on check-outs should be developed to provide a source for continuous evaluation and analysis of circulation procedures, use of materials, and to determine future potential needs.

2. *Established Criteria*—A sound criteria for the selection of materials should be established in order to assure that materials selected for teacher use are not of inferior quality and are suited to the general instructional needs of the school.

3. *Wider Selection of Materials*—Unjustifiable emphasis should not be placed on any one type of material. Instructional aids take the form of anything which provide meaningful experiences for learners. For example, at the present time there are few objects, specimens, or models in the Snyder collection. A wider variety of instructional aids should be available to teachers. Also, expendable materials requisitioned by teachers at the end of each academic year for use the following year might be coordinated with supplies in the Materials Center. From this centralized source, teachers could then check out materials as they are needed. Accurate records of use could be maintained and teachers would be spared the problems of storage throughout the school year.

4. *Community Resources File*—From time to time, teachers find that a field trip or a lecture by a member of the community serves to provide an extremely interesting and profitable variation to classroom work. A resource file which provides an index of the physical and human resources of the community should be developed for teacher use.

5. *Textbooks*—There are many textbooks on the state adopted list which are not in use in the Snyder Schools. Copies of these books can be secured from the publishers. A full collection of these textbooks would provide teachers with a valuable source of reference and ideas.

6. *Curriculum Materials*—A variety of resource units and courses of study developed by other schools and those developed within the Snyder system should be collected for teacher use in planning unit work. A collection of standardized tests in various academic areas would also provide a valuable source of reference for teachers. Teacher-made tests might also be included in this collection.

7. *Location of Materials*—Various instructional aids developed by teachers might be placed in the Materials Center so that they would be available for use by a greater number of teachers. Location in the Center would also assure better maintenance and storage of teacher-made aids.

*Public Relations.* The services of the Instructional Materials Center need to be fully understood by teachers to assure greatest utilization by them. A long-range program of education, designed to acquaint teachers with the various services of the center, should be developed. There are many ways in which teachers can be made conscious of the services and aids available to them. For example, graphic illustrations of teacher problem areas along with possible solutions through the use of Materials Center facilities might be displayed. News bulletins announcing new additions to various collections could be distributed. As new aids are secured which pertain to specific academic areas, they might be made available for teacher review. Small committees from each subject area might be formed to work with the Materials Center specialist in the selection of aids of all types. Teachers should be encouraged to view the Materials Center as a professional laboratory which encourages experimentation in the use of instructional materials and the exchange of ideas.



## More Experience with Utilizing a New School Plant at Syosset, New York, in Contributing to Staff Use and Curriculum Development

JOHN W. PRICE

THE study of the effect of the school plan upon better staff utilization at the Syosset, New York High School, can be broken down into three major steps; exploratory, operational, and evaluative. The preliminary phase took place during the latter half of the 1956-57 school year. It was frankly exploratory in nature. Realization of the full potential of such a radically new type building as this school was made more difficult because the staff had to start work in a semi-finished installation. Many of the faculty were new to the school district and were unfamiliar with its procedures. The preliminary work of this year, however, was invaluable in establishing concrete and practical goals, setting up an administrative framework, and establishing a groundwork upon which a significant and workable program could be based. A partial description of the work of this first year appears in the January 1958 issue of the NASSP BULLETIN.

The second division of the study might be termed the *operational* stage, for it was at this point that units of the program were incorporated into the regular school schedule. As stated by the Syosset Board of Education, it was the wish of the community to establish the highest possible educational standards in its schools. At the same time, opportunities must be provided for all of the students to develop their potentialities to the limit of their individual capabilities. While this did not necessarily require a change in subject content, it might require a modification of presentation of the material.

As detailed, the goal of the study was to determine "... how the physical characteristics of the building could implement such specifics as: ways in which capable teachers could give effective instruction to an increased number of pupils; relationship of class size to the purposes of instruction and methods used; teaching material which cuts across subject lines; freeing teachers and students from traditional approaches to education; flexibility in schedule arrangements; closer working relationships among teachers; student growth in citizenship, responsibility, creativity, and self-direction; and the quality of instructional techniques."

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One of the four project areas in Syosset High School, New York, in use. In the left rear can be seen the curriculum workroom; left center is the unit library; right center, two student work areas; and on the extreme right is a peripheral classroom.

The floor plan of Syosset High School shows four large project areas, each surrounded by a series of ten classrooms, in addition to a curriculum workroom, a library, a guidance office, and special work areas. These large project areas were the *key* to the utilization program. The space permitted very large groups to be assembled centrally from the surrounding rooms. The students could be regrouped in their classes as the need arose. With such flexibility inherent in the school plant, it was possible to tailor the size of a learning group to fit the requirements imposed by the content and purpose of the learning unit. This seemed to indicate an exploration of the administration, structure, and educational value of diverse groups which would prove most effective in teaching the students. This was the underlying concept of the *operational* phase.

The third division of the study—that of evaluation, is still in progress. Donald H. Ross points out in the *Teachers College Record* two approaches to quality measurement, that of process and that of product. It is in the area of the measurement of product that the Syosset study is concentrating. Dr. Ross states that an “ideal” measurement of product would take an impractical period of time—he suggests twenty-five years. He says, however, that we may “legitimately approximate the true measurement of product by the use of achievement tests at different points in the period when students are in the process of being educated.” It is a continuing series of such tests which are being devised at this time to evaluate the progress of the students participating in the study.

## ORGANIZATION OF THE PROGRAM

It became evident during the first year's work that some formal coordination was necessary to avoid conflicts in scheduling, to standardize evaluation procedures, plan and organize programs, and record the activities. In September of 1957, a part-time curriculum coordinator was appointed to fill this need. Clerical help was added in December to assist the coordinator and work with participating teachers. Additional teacher time required for planning, presentation, and evaluation made such assistance essential.

The burden of the study seemed to lie in organizing various groupings in ways which would permit them to take maximum advantage of the building. Five organizational patterns evolved and were established as an integral part of the school program. These included: alternating teaching, co-teaching, master teaching, panel teaching, and team teaching. The alternating, master, and team teaching techniques actually contributed a teacher-time saving factor in the sense that instructors could be freed from their normal duties for a given block of time. The co-teaching and panel teaching programs saved little, if any, time for the staff. In fact, because of the additional amount of time required for preparation, the work load was actually increased. The greater effectiveness of these methods in contrast to a normal class program seemed to justify their inclusion in a study of better teaching utilization.

*Alternating teaching* programs were perhaps the simplest to administer and to schedule. Two or more classes, covering the same material, combined to share common learning experiences. These groups might meet together for a single session or for several consecutive days. They might be scheduled on an irregular basis, or meet on an assigned day each week or month. Usually groups combined for the introduction of a new unit of work. For the large groups, the students would either return to their own classes or break down into smaller groups to clarify the concepts presented, engage in project work, or participate in other activities more suited to small grouping.

In this method, the instructors shared the work load. Each selected from the total mass of material to be taught the areas for which his individual interest and background most nearly qualified him. Although his educational background enabled him to teach the entire course, he was required only to present the areas he had selected as his share of the total program.

These activities of the staff were usually carried on in the curriculum workroom adjacent to the Project Area. The glass walls separating the two rooms facilitated supervision of the large group, yet provided the quiet and privacy necessary to do its work.

This technique was originally evolved out of sheer necessity. The schedule of the music department was too full to provide an instrumental program. Students needing individual training could not meet with their teachers. The free periods of the music staff were overcrowded

with students needing their attention. By using the alternating method of class instruction, any individual teacher could be freed for an entire day at least once a week. His time was used in part for the preparation of the unit he was to teach, and in part for individual instruction. It was possible to tailor his schedule to the needs of the students. This element was characteristic of all classes taught by this method. While students spent some time in large groups, they had greater opportunities to work individually with their instructor. It must be stressed that the large groups were not in operation at all times. Classes returned periodically to their own rooms and worked with their own instructors.

The *co-teaching* programs were especially valuable when classes were combined across subject lines, and were perhaps the most stimulating and effective method of presentation evolved in the study. *Two* instructors shared the instruction load. Used to its maximum effectiveness, both *discussed*, rather than *lectured*, on the subject.

In areas where the authorities disagreed about salient points, this method was especially effective in demonstrating that valid arguments could be presented for both sides of a given question. An English and a social studies teacher working in concert could offer a far more complete picture of the development of American culture by discussing the cross influences between their two fields. Working separately, a less inclusive picture could be drawn. This method was interspersed in the other programs described here. It was particularly valuable after a presentation by a "visiting expert," and was most conducive to active and enthusiastic discussion by the students.

The term *master teaching*, although not generally liked by the faculty, seems to have grown up to describe sessions conducted by an individual who is an acknowledged specialist in a given field, and who is particularly competent to teach it. It was stretched, in this study, to refer as well to the instructors called in to give presentations in fields other than their own. Thus, the title was applied to a science teacher who spoke before an English group. She had been closely associated with television for a number of years, and was obviously competent to handle this aspect of communications for the group. A survey of the backgrounds of the faculty provided a resource file from which qualified personnel were drawn as the need arose in special projects.

*Panel teaching* grew out of the use of this device in television shows. It included groups of students or teachers, or combinations of both, working together to solve given problems, or to discuss aspects of them with combined groups. It was more formal in some aspects than the *co-teaching* technique. Although more individuals were involved, the panel generally covered less ground than the *co-teaching* method. Panels had a tendency to drift into a set pattern and hold to previously conceived concepts. Questions were usually held until the end of the discussion because of the time limit. Generally, this technique lacked the spontaneity and general participation found in *co-teaching*, although

in some instances it was very effective. One such effective use was with a group of teachers from the English, social studies, language, music and art departments discussing the effects of the cultures of Greece and Rome on contemporary life.

The purpose of *team teaching* is the integration of two or more subject areas with common interests. For the past year, an English and a social studies teacher worked as a team on a parallel schedule. A group of students in this program would study with one teacher and the following period work with the second. Following this, they were gathered in a study hall directed by the team. At the same time, a second group of pupils was following the same program with the alternate team members. The time was scheduled in blocks of three periods for team work, leaving the remainder of the day open for a normal school program. The availability of a continuous block of time for work with the group allowed for great flexibility. A variety of groupings was possible without interfering with the normal school program. Such groupings were used for introductions to new units, audio-visual presentations, reviews, projects, etc.

#### PROBLEMS INHERENT IN LARGE GROUP TEACHING

The sharpest lesson learned during the pilot study of the first year was the importance of careful planning of all details well in advance of any group subject. To achieve a thorough mutual understanding of the aims and requirements of each participating class, weekly and, frequently, daily meetings were held. These weekly, and frequently daily meetings were necessary. These extended over a period of from one to three months prior to the actual start of the program. While some free time was arranged for these people, the bulk of this work was carried on after school hours and on weekends.

Teachers' professional growth was greatly stimulated by large group participation. As a result of the additional study made by the staff, the amount and quality of supplementary material made available was noted by all who saw the program in operation. This type program has a residual value to the school program. In a previous study, W. J. Holloway found that:

1. Teachers engaged in curriculum work did very much more professional reading than they had ever done before in any one year, and more than the teachers of control groups studied during the investigation.

2. Teachers of the experimental groups continued to improve in professional spirit, attitude, and teaching skill in the years immediately following the experiment, at a faster rate than did those in the control groups.

3. Children in the experimental schools made, for the most part, slightly greater gains in the areas tested, than the children in the control groups.<sup>1</sup>

The empirical evidence at Syosset at this time tends to confirm these findings.

<sup>1</sup> Holloway, W. J. *Participation in Curriculum Making as a Means of Rural Schools*. New York: Bureau of Publications, Teachers College, Columbia University, 1928.

In addition to the stimulation of professional growth and enriching the curriculum, several advantages occurred. A more satisfactory articulation within subject areas was created. Since a faculty is often drawn from training institutions of surrounding states, varying emphasis is placed by these institutions on background, materials, and techniques. This fact creates an uncoordinated program. It is also a fact that most teachers have aptitudes and preferences for specific subdivisions within their own subject area which are often unconsciously stressed. The variables can distort a program, even in schools with strong and carefully outlined syllabi. Since a combined class must be cooperatively developed in great detail, agreement must be reached among participants on points of emphasis within the curriculum.

This factor led to a modification of the first year's study which stressed the "Master" teacher. While an individual might be outstanding in his field, he was subject to the above mentioned influences. In addition, a problem of status arose, leading to a drop in morale among those instructors not classified as "Masters." The "Alternating" and "Cooperative" teaching techniques which developed corrected these negative factors.

Standards of measurement became more uniform among cooperating classes. The recurring administrative problems of the "strict" and the "easy" teacher as they affect course content and student evaluation are reduced. As the staff found more time in which to prepare lessons, the quality of the material presented was increased. As they found time in which to develop testing procedures and instruments, and for checking their validity, more reliable evaluations across class lines were devised. A report to parents could now give a more accurate appraisal of the pupil's true standing in a given department.

An interesting by-product of combined classes was discovered. Students were no longer conscious of "their" subject teacher as being the only source of help or information. As the program progressed, all teachers involved were freely approached by students with questions or problems. Non-teaching assignments or supervision no longer acted as a liability to the student seeking help since some teacher was always available who was familiar with the lesson plan. This helped greatly to individualize the program.

One of the questions most frequently asked about the programs involving large groups, concerned the "loss of the individual." To provide for this contingency, those released teachers not engaged in research for their own unit were available for work with individual children. This included not only the "slow learners," but the average and exceptional child as well. If necessary, a teacher could spend one or more full class periods a day with a single pupil. Tape recordings were made of each group session. These were available for use by the student forced by illness or other reasons to miss the class. The tapes were also available for review by those needing the extra work. It was not necessary for an instructor working as a part of the group to be



present to know the material covered by his students in the large session. The tapes could keep him abreast of the material being taught.

If, in the opinion of the cooperating teachers, students would benefit by the use of special audio-visual aids, if a test was to be administered, if a visiting "expert" was available, or if certain common forms of information were to be presented, classes were combined. If no need were found for combining, a normal class was held. Students were moved to the various areas most conducive to the success of the type presentation given. A rigid schedule of small or large groups was not adhered to. In our judgment, which method of presenting the required material will provide the soundest educational benefits for the pupils? The answer to this question provided the simple determinant for establishing how, where, and for how long a class was to work on a unit. One of the duties of the coordinator was to guard against over enthusiasm in planning large groups. While adequate time is required for students to absorb a unit of material, their interest span must be considered. A constant check of each group is necessary to provide a balanced and consistently effective program.

#### PLANNING A COMBINED CLASS UNIT

"Better staff utilization," in the opinion of the administration, meant the use of the existing personnel to their maximum effectiveness. Not all teachers could be included in large group work. The interest and ability to undertake these programs vary among individuals. Many teachers cannot make the necessary adjustments to work with different sized classes. On the other hand, some teachers are unusually qualified to work with small groups or even with individuals. Prior to the start of a given program, a screening program and planning sessions were held. Some projected programs were discouraged because of conflicts with the existing program or because they simply did not offer enough educational benefits to make them worth while. Some were not considered because teachers simply did not have enough time to give to the extensive preparation necessary before a proposal could be put into effect.

At the time the sub-units were drafted, the staff divided responsibilities among themselves for various phases of the work. Interest and background of individuals in specific aspects of their own major fields were found to vary considerably. By a division of the work load, they were able to conduct sufficient research to enable them to function as a comparative "expert" in the area of their choice. At the same time, the mutual planning kept them abreast of the thinking of the entire committee. The obvious interest of the teachers in their specialty as each conducted the group sessions was reflected by the students' interest and an improved classroom attitude.

In the final planning sessions, informal workshops were held to demonstrate the use of audio-visual materials. These included a tape recorder which was used as a public address system, as well as a recording instrument. A chest microphone was provided for the instructor and



a mike boom was provided to pick up student responses, requiring additional instruction in their use. Demonstrations were given of the use of the VuGraph. The possibilities of the flannel board, and the use of the opaque and other type projectors were discussed as their need was established. Visual materials were discussed as their need was established. Visual materials were prepared in advance by art students and teachers.

#### STAGES OF THE PROGRAM

Prior to the start of any project at Syosset, its scope and its aims were explained to the youngsters to give them a clear grasp of its purpose. The introduction included a thorough indoctrination in good study habits as well as effective note taking. This was felt to be of especial importance, since many of the students had no previous guidance in these techniques. An outline of the material for the entire semester or unit was explained and the part to be played by each participating teacher was spelled out at this time.

Some projects were often worked on in very small groups under the direction of student coordinators working under a contract system. The entire facilities of the Little Schools were used by these students, including the project library, curriculum workrooms, and the individual classrooms. Project work was planned to develop to the fullest possible extent the learning assimilated in other sections of the program. They entailed: planning between students and teachers and cross-planning among students to avoid duplication of effort; research, individual or group; and project construction. A considerable amount of responsibility for the success of the projects rested with the pupils at this stage of the program.

#### EVALUATION

Evaluation played a major part in the second year's work on the study. While the participants felt that this work of the various groups unquestionably enlarged and enriched the learning experience of the students, their evidence was primarily empirical and based on their own experience. An attempt was made then to examine not only the progress of the students, but the success of the teacher as well. One form of evaluation was made on a simple check sheet. Comments were solicited. This form was used by the department chairman, the curriculum project coordinator, and by parents and other visitors watching the projects. These were gone over by the teachers involved as a part of the self-evaluation sessions following each project.

Success of individual teachers in giving information could be determined to a considerable extent by the results of student tests. Since all participating teachers cooperated in making these instruments and a common key was used in grading, less tendency toward personal bias was found than might exist in an examination made and graded entirely by the person presenting the unit. Commenting on the evaluation procedures used for a seventh-grade social studies and English combined class, Mr. Jacob Padgug, the chairman of the group said:

In answer to a prevalent criticism of American public education, specifically that which charges that pupils are not challenged or required to work up to their capacity, many of the tests given have required a level of achievement beyond what is normally required of seventh-grade students. When the minimum passing grade is raised, it should be obvious that educational requirements, in terms of achievement, are more stringent. We believe that an example of the tangible results of tests given to our students in our program will show that there has been a challenge; that these youngsters have been required to work and to produce; and that they have been learning more, at least in terms of what they can put down on paper.

The seventh-grade social studies program of which Mr. Padgug spoke, operated in as nearly ideal an environment statistically as could be established. At the time of the study, 337 pupils were studying a half-year unit on the history of New York State. Three teachers, working with 207 pupils, formed the experimental group which used one or more of the techniques described earlier. Two instructors worked with normal sized classroom groups in regularly assigned classrooms. These teachers, with the 130 pupils they taught, composed the control group. Although the samples were heterogeneous and were large enough to produce valid results, parallel tests of achievement could not be given. The experimental group covered the field in greater depth than was possible in a normal class. It was only fair to say that this in no way reflected upon the ability of the teachers in the control. The correspondingly greater amount of time the instructors in the "X" group had to prepare their material, and the time available to work with individual students made possible a more comprehensive program than could be presented by a teacher under the pressure of a normal teaching load.

It was thought that perhaps classes progressing more rapidly over a greater range of material, might not be able to assimilate what was taught. Fears were also expressed that, after the novelty of the technique wore off, a drop in interest might be evident among the students with a corresponding drop in effort. Achievement tests were given throughout the program to check the first point, and class discussions and individual interviews were given to check the second. Student interest, it was discovered, actually increased as the study progressed.

An idea of the achievement of the "X" group may be had by a look at the results of two of the many tests that were given. The first, given early in the work, was selected from the normal textbook used by the class. Of the 179 pupils taking the first test, 38.5 per cent made no errors, and 54.1 per cent made two errors or less. Twelve items made up the test. The second test tabulated was compiled by the cooperating teachers. A statement by these men indicated that the material required a level of achievement beyond that normally required of seventh-grade students, yet the results were similar. Of 175 pupils taking this test, 55.4 per cent made two errors or less. Fourteen errors were possible. The variance in numbers taking the test was caused by the fact that only tests taken in class the first day it was given were counted. This was to avoid bias. Since none of the classes was grouped according to ability,

it may be assumed that the speed and detail with which the material was covered did not serve as a deterrent to the progress of the pupils. Despite the increasing depth of the tests, a negative skewness was evidenced in most of the tests given these students during the program. There seemed to be some basis for believing that some individuals had performed at a higher level than might be expected. This was verified by a study of the records made by these pupils before the commencement of the large group work.

One of the generalizations arising from the study was the belief that more accurate reporting to parents was possible. A large sample, covering a heterogeneous group, might be expected to approximate the spread of a normal distribution curve in measurement of achievement. Although this need not necessarily be true, the curve does give a bench mark from which any study of a group may start. Although individual tests are valuable measuring achievement, the report-card grade expresses the total production of a pupil as compared with his peer group. It is a known fact, however, that two pupils, working at the same level in the same subject, under two different instructors, can receive radically different grades. Because of the stress placed by many colleges upon grade standings of applicants, it is of the utmost importance to assign a grade to a pupil which will reflect a true picture of his actual accomplishment. Whether college bound or not, in all fairness to the pupil, an equitable grade is due to him.

In the opinion of the administrators of the study, any *radical* departure from a normal distribution curve during or after the group program might indicate a bias on the part of the participating staff members and invalidate the study. Extreme enthusiasm was a characteristic of these people, and it was necessary to guard against a distortion in grades which might result. Report card grades, therefore, were totaled for all students in the control group and separately for the experimental group. The control group's grades were used solely for purposes of comparison. Owing to the teacher planning sessions going on during the first half of the year, some uniformity in standards prior to combining classes was inevitable. This may, in part, account for the wide variation existing between the C and X group.

If the normal distribution curve is accepted as a "yardstick" suitable for measuring performance of a large sample, then the teachers working with the experimental group probably came close to assigning a "true" grade to the work of each student. While it is possible to have a cluster of very bright students in a heterogeneous group, in such a random sample, it is not probable. The drop of 17.5 per cent in the number of "A's" assigned by the teachers of the control group seem to indicate a gradual shift in the more normal distribution than their pre-study grades would indicate. This coupled with the increase of 3.5 per cent of failing grades for the second semester seems to preclude the possibility of any large cluster of fast learners in the control group. Interestingly enough,

Total Report Card Grades for 1957-58 School Year  
Seventh-Grade Social Studies Classes

Winter Semester		Spring Semester—Experimental Period	
Experimental Group Grade (Three Teachers) %age of Each Grade	Control Group Grade (Two Teachers) %age of Each Grade	Experimental Group Grade (Three Teachers) %age of Each Grade	Control Group Grade (Two Teachers) %age of Each Grade
A 13.8	A 27.0	A 11.6	A 9.5
B 32.3	B 25.4	B 29.5	B 31.2
C 38.6	C 26.2	C 38.7	C 26.3
D 10.1	D 11.3	D 15.5	D 19.4
F 4.9	F 9.8	F 4.3	F 13.3
99.7	99.7	99.6	99.7

Note: "A" is outstanding; "B" is above average; "C" is average; "D" is below average and "F" is failing.

the grade "C" used theoretically to denote the "average" student remained constant. Both groups rose 0.1 per cent at this point.

Crude as these figures may be, they make up the evidence by which parents may estimate their children's progress. If cooperative teaching techniques can increase the reliability of such measures, some progress has been made in standardizing grades in a professionally acceptable way.

#### PROS AND CONS OF LARGE GROUP TEACHING

Examination of the possibilities of large groups in learning has been carried out over a period of years. Some of the *pros* and *cons* of this method have been gathered by Ellsworth Tompkins formerly of the Federal Security Agency, now of NASSP. They are presented here in relation to the Syosset program. Some of the points brought out in the pamphlet include: "The shy pupil and the boy or girl of lesser achievement are likely to be served better by the small class. The brighter pupil is served well by the class of normal size . . ."<sup>2</sup>

Present evidence of this study shows that, in some instances, the slower student has increased the level of his performance in the large group. This may be due to two factors inherent in this system. Many brighter students who are under-achievers may be more stimulated by the activity of the large group. Further evidence will be necessary to determine if this is actually true. Second, because of the released time of some of the participating teachers and the use of taped recordings of all sessions, the slower student may receive individual guidance or special review of the material he has missed to a degree impossible

<sup>2</sup> Ellsworth Tompkins, *Large and Small Classes in Secondary Schools*, Circular No. 306, Washington, D. C.: Federal Security Agency, Office of Education, U. S. Government Printing Office, 1949.

in a normal class. In addition, the fact that large classes, supplement small class sessions keeps the teacher in contact with the individual student fast or slow.

To teach a large class capably requires an instructor of unusual ability, strong personality, broad experience, and a facility for organization. Inexpert teaching in a large class is an instructional calamity.

Adaptation of instruction to large classes is likely to necessitate the use of teacher-helpers selected from the class or the student body.

The first of these points is borne out by the work at Syosset, and is self-evident. In the case of the second point, it has been found that student assistance is primarily needed to facilitate the taking of attendance, passing and collecting materials, *etc.* Discipline problems in the large group diminish, rather than increase, with the size of the class. The increase of attention in these groups is due to the quality of teaching techniques used according to the views of subjective teachers involved.

If a teacher of a large class attempts by himself to check pupils' written assignments, compositions, and tests, he faces a difficult, arduous, and sometimes impossible task. In such a situation, it is obligatory for the instructor to have some clerical and secretarial help if checking is to be complete.

The use of clerical help has been of major assistance and importance not only in checking papers, but also in preparing and evaluating testing instruments used by the groups.

"A larger class usually stimulates the teacher to 'teach her best.' " The stimulation of such a program upon the teacher's professional growth has been previously cited. The effect upon his classroom teaching before a large group is equally impressive. While very little can be pointed out objectively in this abstract quality, the responses of the students to the quality of teaching have been overwhelmingly favorable. Observations by other teachers have confirmed empirical findings.

A large class requires a carefully planned and executed educational program. Very little can be left to chance.

An arrangement for individual help to pupils having difficulty is essential. At the same time, it is just as important that the teacher in the large class stimulate and inspire the exceptionally competent pupil.

Both these points have been discussed at some length elsewhere in this report.

While the atmosphere of the large class is not necessarily formal, it is conceded that there is an enrollment point beyond which it is impossible for very large classes to be informal, even though the personality of the instructor stimulates informality.

The large class should be provided with extensive and up-to-date teaching aids . . .

One of the major advantages of large class instruction is the relative economy with which modern teaching aids may be used. One of the criticisms in the past, of some of these aids has been that they were

available to the small classes at times in which they did not necessarily lend themselves to the best continuity of the classwork. This is particularly true of films, radio programs, and television programs. The time and expense of preparing material for the Vu-Graph or opaque projector deters many teachers in small classes from using these aids. The numbers of students involved coupled with the released time in large group teaching stimulates the use of these professional teaching aids.

A final quotation from the circular points out that "Many schools which have scheduled large classes readily admit that they are not equally desirable or undesirable for all teaching situations.

While preliminary evidence tends to point out the value of the Syosset program in raising the level of the assimilation by the students, much of the evidence has yet to be evaluated. As is the case with many such studies, the enthusiasm of the staff members involved in the work may distort the subjective findings. Preliminary objective analysis of test findings based upon a control and the "X" group are heartening. The curves tend to lean toward the high end of the distribution in such tests as have been given. In the last analysis, the value of any program is dependent primarily upon its effect upon the students involved. The amount of student participation, which has been measured, has shown a gradual increase in student participation and response—greater than might be expected in a traditional classroom.

One of the most rewarding effects of the program is its effects upon the teachers themselves. The quality of preparation, presentation, participation, and evaluation among the teachers has reached high levels of professional quality. While much remains to be accomplished, the preliminary results point to an increased awareness of the needs of the pupil in the light of the expanding fields of knowledge existing today and the role of today's teacher in meeting them.

No finer summary of the work of the past year may be found than the conclusions contained in the report of his committee by Mr. Padgug. He says:

The importance of considering achievement of students, as displayed by scores on tests, cannot be denied. Of at least equal importance, however, are changes in attitude and behavior—that entire crucial area which defies measurement through the use of objective instruments. If education is indeed to do anything more than cause students to retain information; if it is to have an effect upon human behavior and societal values—the nebulous areas must be scrutinized. Observed behavioral manifestations indicative of change in specific individuals must be noted and added to whatever empirical evidence is thus far available.

Upon reflecting, it is easy to recall a boy of high intelligence, whose achievement was poor. He was a complex emotional problem which stemmed from a home situation. There seemed to be no will to work—until, in a group project which followed and was related to a large group instructional unit,



he was given a position of responsibility and authority in an area where his interest were high. He blossomed. For the first time, he appeared happy; for the first time, he worked hard; for the first time, he completed his work.

Another boy, a non-reader, achieved nothing academically. In project work related to a large group instructional unit, however, he was able to draw a picture of a flintlock rifle; he added to this an enlarged drawing of its firing mechanism. His work was good—and, moreover, it was pertinent. It is very possible that his success at that time did more of a positive nature for him than any other experience he had during the school year.

The seriousness with which students in general approached their work in large group sessions and related project and small class work, as compared to their general attitude toward work that had no relationship to the experiences of the experimental program, was evidence of behavioral change of a mass nature.

But how does one measure these things? This teacher does not know. He does know, however, that shying away for a consideration of these factors because they can't be "scored" objectively, will not, ostrich-like, make them go away.

#### CONCLUSIONS

The role of the teacher is changing radically today. Television, radio, and modern means of communication are not only offering new means of teaching, they are, by producing educational material in an extremely entertaining manner, also competing indirectly with the traditional ways of teaching. By using some of these professional techniques, the modern instructor may make his contacts with the students stimulating and mutually rewarding. Not that any entertainment media can or should compete with teaching methods, but teachers must recognize that exposure to the outstanding quality of some of these programs may, to some degree, numb the receptivity of the more prosaic day-to-day "grind" of the traditional classroom.

A danger which exists in attempting to overcome this natural apathy lies in the attempts of many otherwise qualified teachers to attempt to over-motivate their students by the means of tricks, gimmicks, and other stimulation which frequently break down when the student is actually faced with the task of learning.

Large group teaching by itself is not the answer. It can help to a considerable extent, however, when used judiciously and when implemented by small class instruction and the personal contact of the individual teacher with the individual pupil. The dangers of the "gimmick" are minimized when a group of teachers in the same area work together to plan combined units. The stabilizing influence of a person outside the subject area acting as a coordinator helps to offset any tendency toward "trickiness."



## **Staff Utilization Studies Help Utah Educators**

### **A. A State-wide Study Organized by Principals' Association**

MATTHEW F. NOALL  
LERUE WINGET

IN UTAH, recent efforts to widen the tax base for the improved support of education have implemented a two-sided investigation: *first*, to improve the achievements of the schools, and, *second*, to provide finances to support a more efficient educational level within the state. On the one hand, the lay discussions of teacher shortages and the means to correct the public school deficiencies have become increasingly frequent while, at the same time, the public school teaching and administrative staffs have also become more sensitively aware of the necessity to arrive at new points of view in order to solve these problems. Both the public and the administrative personnel are now vitally interested in accomplishing the relief of teacher shortages and the receipt of higher dividends from the financial investment in public education.

In 1956 the research program announced by the NASSP Commission on the Experimental Study of the Utilization of the Staff in the Secondary School and its supporting agency, the Fund for the Advancement of Education, attracted certain Utah educators, as well as many people of national standing. In answer to the request for a state committee to work on the proposals of the National Commission, the Utah Central Research Committee was promptly organized.

This committee was effected upon a state-wide level. It was developed under the direction of the Utah Secondary-School Principals' Association in cooperation with the Utah State Department of Public Instruction. It was nationally unique in gathering into one over-all policy-making group the principal educational forces of the state.

The committee consists of five members of the Secondary-School Principals' Association of Utah—the president, who is a senior high-school principal; the vice-president, who is a junior high-school principal;

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the senior high-school representative; the junior high-school representative, and the secretary—; four people from the State Department of Public Instruction—the assistant superintendent, the director of secondary education, the assistant director of secondary education, and the director of research—; a representative from each of the three universities of the state—University of Utah, Brigham Young University, and Utah State University; an executive secretary; and an assistant to carry out the policies of the Central Committee. The state director of secondary education, who is also the secretary of the Secondary-School Principals' Association, serves as chairman of the Committee. The Central Research Committee provides leadership in directing and coordinating the studies in the state and in implementing the findings in school situations.

Each experimental research study is supervised by a local project committee. A representative from one of the institutions of higher learning, who is also a member of the local project committee, acts as consultant to the local committee. He ties the work into the over-all educational philosophy of the College of Education at the university which he represents. The director of the Utah Central Research Committee serves as liaison officer between the local project committee and the central state organization. He also informs educational groups in the state of the activities of the Central Research Committee.

#### EXPERIMENTAL PROJECTS

The first experimental studies in connection with the work of the commission were conducted in Utah during the school year 1957-58. Interest in the work increased as the knowledge spread concerning the research necessary to a discovery of more efficient educational procedures. To date, many educational problems have been proposed, the solutions to which should lend themselves to action-research.

Under the sponsorship of the NASSP Commission and the Fund for the Advancement of Education, three studies were conducted in Utah schools during the 1957-58 terms. The three projects were:

1. A study of the teaching of physics in Utah high schools by means of a special set of Encyclopedia Britannica Films known as the *Harvey White Physics Films*.

2. An investigation of the implications involved in introducing the core curriculum in regard to the utilization of the time of instructors and the resultant effect upon pupils in the seventh grade in the junior high schools of Weber County.

3. A utilization and evaluation study of junior high-school education. This included a critique of criteria already developed by a local committee appointed for that purpose.

A total of 27 schools—9 junior and 18 senior high schools—have thus far been involved, one way or another, in the studies. Additional schools have been added in 1958-59. Additional experiments concerned with team teaching, driver training, and para-professional assistants are being contemplated.

## B. The Physics Film Project

MATTHEW F. NOALL  
LERUE WINGET

The Utah Physics Film Project was a study to determine the effectiveness of teaching a complete course in high-school physics with a special set of Encyclopedia Britannica physics films. The set, consisting of 162 thirty-minute lecture demonstrations, is known as the *Harvey White Physics Films*, named from the teacher, professor of physics at the University of California. The experimental course covered the school year 1957-58.

### INTRODUCTION

Like many other states, Utah has particular problems which might be partially solved through such media as the *Harvey White Physics Films*. There are a number of small and medium-sized high schools in the state that have difficulty in offering courses such as physics. In these schools it is impossible to have teachers who have specialized in each area of the curriculum. Because of this, many schools do not have anyone on the staff who is specially prepared to teach physics. As a result, some teacher is likely to be assigned this class even though he may have little preparation in the field. In addition to this problem, many of these same schools find it difficult to provide adequate laboratory equipment for the experiments which should be demonstrated. Both of these problems, trained teachers and adequate equipment, might be at least partially solved through use of the Physics Films. The academically unprepared teacher, through showing and studying the films and through reference to the text, might be able to do a more satisfactory job of teaching than he normally would in this foreign field. Demonstration of complex experiments *via* films could go a long way toward bridging the gap between no equipment for demonstration and sufficient equipment to demonstrate any experiment suitable for high-school physics. Thus it appears that the *Harvey White Physics Films* might have real utility in the high schools of Utah and many other similar states.

In order to learn something of the usefulness of such media as the physics films in high-school teaching, the Utah Secondary-School Principals' Association proposed that a study be conducted, involving a number of schools in Utah, comparing the effectiveness of the *Harvey White Physics Films* with regular pedagogical methods. (Funds for this study were provided by the Fund for the Advancement of Education.) Twenty schools, ten experimental and ten control, were selected to participate in the study. A set of the *Harvey White Films* was procured by Brigham Young University and rented to the Utah State Department of Public Instruction for use in the study. Physics was taught primarily through the films in the ten experimental schools and through regular

pedagogical methods in the ten control schools. Student progress for the year was checked on two measures: (a) achievement progress was obtained from the *Cooperative Physics Test* and (b) interest progress was noted on the *Strong Vocational Interest Blank*. Appropriate statistical comparisons were made.

The basic criteria for the study are expressed as "gain" scores. A given student's gain score in physics is the difference between his initial test score and his final test score. Thus, a student who had a 32 on the pre-test and a 56 on the post-test would have a gain of +24. Throughout the remainder of this report gain or gain score will refer to the improvement made between the fall and spring testing.

### RESEARCH DESIGN AND IMPLEMENTATION

In conducting educational research, it is frequently possible to choose between a carefully controlled, but sometimes sterile, laboratory design and a much more loose, but sometimes fertile, study. This was the case in the current study. In such situations the advantages and disadvantages of each alternative must be weighed with the realization that certain desirable factors will be compromised whichever choice is made. In this instance the decision was made to sacrifice control for the gains to be derived from observing the use of the films in a classroom situation.

#### *Selection of Schools*

At the inception of this research, it was thought that, in addition to the straight experimental *versus* control study, it would be wise to consider any possible differential relationships of size of school to the utility of the two methods of teaching physics.

In accordance with the decision to employ schools of various sizes in the study, three large schools with well-trained teachers and adequate facilities; three medium-sized schools where physics had been taught, but where teachers lacked formal training in physics and where equipment was meager; and four small schools where physics had not been previously taught, where teachers were not formally trained in the area of physics, and where there was very little physics equipment, were chosen. These schools were selected after careful consideration of environment and location and with the full approval of the teacher, principal, superintendent, and board of education. They were designated experimental schools, which meant simply that they would use the *Harvey White Physics Films* as the primary basis for teaching physics.

Ten additional schools, using similar criteria, were named as control schools. Students in physics classes in these schools were taught using usual methods. They were not to use the films shown to experimental classes. They took the same pre- and post-test that the experimental students took.

TABLE 1. Schools Listed According to Classification and Group

Classification	Group			
	Experimental A	Experimental B	Experimental C	Control
Small Schools	Panguitch N = 17*	Hurricane N = 35	South Rich North Rich N = 52	Tabiona Duchesne Escalante Bryce Valley N = 38
Medium Schools	Spanish Fork N = 49	Millard N = 17	Lehi N = 18	Pleasant Grove North Cache Payson North Sevier N = 96
Large Schools	Olympus N = 48	Weber N = 36	Logan N = 24	Logan Olympus N = 82

\* N is the approximate number of students who were tested in each category in the pre-test, Autumn 1957.

The material presented in Table 1 shows the assignment of schools to the various classification, groups, and experimental conditions. Data from this table indicate one of the real problems encountered in this study. Three schools, each representing a group-classification by itself, had enrollments in physics of less than twenty students, and this was in the autumn before dropout attrition had time to take effect. At the other extreme, there were 96 students in medium-sized control high schools. The small N on the one hand and the inequality of N on the other hand both serve to increase the problems associated with data analysis.

#### *Selection of Tests*

The testing for this investigation had two primary facets. The more obvious one was that of estimating progress during the year. Progress was felt to have both achievement and attitudinal aspects. Tests were selected in each of these areas. The second purpose for which testing was required in this study was that of matching the various groups being studied so that differences in gains would not simply reflect variation in uncontrolled variables. Tests chosen for matching dealt with mathematics achievement, mental ability, and study habits.

#### *Tests for Progress Criteria*

*Achievement gains.* Achievement gains were measured with the *Cooperative Physics Test*. Form X was administered in the autumn and Form Y was given in the spring. The *Cooperative Physics Test* has 77 items with a forty-minute time limit.

*Attitudinal progress.* Just as the knowledge gained in a high-school course, such as physics, is important, so also is the desire of the student to learn more at the end of the program. At best, he has been introduced to the subject. If he is to continue studying and learning, he must have desire. The question in this study is whether this desire is fostered more effectively in a regular classroom situation than it is in a class taught with *Harvey White Physics Films*.

#### *Tests for Matching*

*Mental ability.* The *California Mental Maturity Test, Short Form, Advanced*, was used to gain an estimate of mental ability. This fifty-three-minute test gives both language and non-language scores in addition to a total score. Reliability is reported as being about .90. The test is said to be primarily one of power rather than speed.

*Mathematics achievement.* Since achievement in physics is based at least partially on ability to work mathematical problems, students were all given the *California Mathematics Test, Form AA, Advanced*. This is a 140-item test with reliability coefficients above .90.

*Study habits.* Because the study habits of the students might influence school achievement, the *Brown-Holtzman Survey of Study Habits and Attitudes Test* (SSHA) was administered. Significant correlations with high-school grades have been reported for this inventory. The reliability coefficient is stated at about .83.

#### *Initial Testing*

During the first two weeks of the 1957-58 school year, the tests described above were administered to students in the ten experimental and ten control schools. The results of this testing are presented in Table 2. The most striking fact about the data in Table 2 is the extent of the inter-school variability in mean scores. For example, on the *California Test of Mental Maturity*, the mean scores range from a high of 78.53 to a low of 58.39. Nor is this range in means atypical; it seems, rather, to represent the real variation in the classes.

Because of the variability represented by the range of mean scores shown in Table 2, the plan of analysis of the data was changed. Where matching of large groups, cutting across several schools and treatments, had been planned, the decision was now made to make gross, non-inferential comparisons and supplement these with inferential statistics, where it seemed warranted, on small, select groups.

#### *Sequence of Film Presentation*

In addition to the principal investigation, that of comparing regular teaching methods with teaching *via* the films, another research problem was posed by the necessity of using one set of films with ten different schools. Distributing the films to this many schools spread throughout most of Utah made it impossible for all of the schools to see the films in the same order. Because of this, the films were organized into three

TABLE 2. Mean Test Scores for Students in Physics Classes in the Various Participating Schools

Group	School	N	California Mathe- matics	Study Habits	California Mental Maturity			Physics	Strong (Interest) Math-Sci. Teacher
					Non- Language	Language	Total		
Small Control	1.	10	77.30	25.40	36.90	26.90	63.80	8.50	36.50
	2.	6	91.83	30.67	35.83	30.83	66.67	8.33	41.67
	3.	18	62.83	25.22	33.61	24.78	58.39	7.67	24.06
	4.	5	76.20	29.60	34.40	24.00	58.40	5.40	32.40
Small Experimental	1.	35	78.69	31.03	36.74	28.00	64.74	9.00	32.17
	2.	19	95.21	28.42	35.84	34.53	70.37	13.37	28.16
	3.	32	83.06	28.59	33.41	30.41	63.81	10.00	28.63
	4.	17	79.88	24.88	36.12	29.71	65.82	8.29	29.76
Medium-Sized Control	1.	25	102.28	30.08	39.84	30.44	70.28	14.56	39.24
	2.	20	116.25	37.80	43.15	34.25	77.40	14.20	41.75
	3.	17	115.00	31.65	42.24	36.29	78.53	14.76	35.82
	4.	33	108.18	29.61	41.55	35.58	77.12	16.03	40.21
Medium-Sized Experimental	1.	18	83.39	27.44	37.00	27.94	64.94	9.06	35.28
	2.	17	97.65	32.24	39.29	32.71	72.00	11.24	35.35
	3.	48	103.31	33.42	41.92	34.48	76.40	11.54	37.69
Large Control	1.	24	88.46	30.25	36.17	29.08	65.25	11.92	33.25
	2.	44	108.34	33.93	41.50	36.25	77.75	22.55	35.93
Large Experimental	1.	25	91.08	30.84	37.64	32.08	69.72	8.36	29.40
	2.	50	105.38	34.79	40.21	36.92	77.12	21.04	35.62
	3.	36	100.92	36.08	39.42	37.67	77.08	27.61	42.11

units as follows: *Unit 1*—Mechanics; *Unit 2*—Properties of Matter, Heat, Sound; *Unit 3*—Light, Electricity and Magnetism, Atomic Physics, Electronics, Quantum Optics, and Nuclear Physics.

The experimental schools were also organized in three groups with Group A seeing the films in the sequence 1, 3, 2; Group B in the sequence 2, 1, 3; and Group C in the sequence 3, 2, 1. Since the order of seeing the films might influence achievement in physics, gain in physics scores was compared for the three sequences. This comparison is presented in Table 3, which shows both the mean *California Mental Maturity Test* scores and the physics gain scores for the three sequences.

It is apparent from Table 3 that there are fairly large differences among the sequences, in respect to both mental maturity and gains in physics achievement. However, there is a certain degree of consistency in these differences. That is, both the measured mental maturity and the physics gain are highest for sequence A. On the other hand, sequence C, with the lowest measured mental maturity has a slightly higher average gain than does B. It seems likely that this difference can be explained on the basis of elements other than sequence since for only one group, large, is there this reversal for sequences B and C. Table 4 compares the mean scores, by size of school, for the three sequences.



TABLE 3. Comparison of Physics Gain Scores for the Three Sequences of Film Presentation

<i>Sequence</i>	<i>Mean Total Score California Mental Maturity</i>	<i>Mean Gain Score Physics</i>
A 1,3,2	75.13	16.08
B 2,1,3	71.19	11.55
C 3,2,1	66.93	12.24

In Table 4, it will be noted that for medium-sized schools there is a perfect relationship between measured mental maturity and gain in physics achievement. For large schools, there is a definite situation of gain scores for sequence B being smaller than would have been predicted from mental maturity scores. Gain scores for sequence C are correspondingly larger than would have been predicted. However, for small schools, while the mental maturity scores differ to only a slight degree, there is actually a reversal in sequences C and B from the trend noted for large schools.

From the limited evidence, it appears unlikely that gain in physics achievement was materially affected by the sequence of film presentation.

## RESULTS

### Introduction

As has been previously discussed, inter-school differences on measures selected as bases for matching groups were so large as to render virtually meaningless any attempt to equate schools or groups. However, it was felt important to get an estimate of the relationship between the variables, originally intended for matching purposes, and the dependent variables; *i.e.*, gains in scores in physics, mathematics-science teacher (interest) and physicist (interest) in order to be able better to judge whether any matching should be attempted. Because of the inter-

TABLE 4. Comparison of Physics Gain Scores by Size of School for the Three Sequences of Film Presentation

<i>Size of School</i>	<i>Sequence</i>	<i>Mean Total Score California Mental Maturity</i>	<i>Mean Gain Score Physics</i>
Large	A	77.12	19.45
	B	77.08	12.75
	C	69.72	20.75
Medium	A	76.40	15.98
	B	72.00	11.25
	C	64.94	7.07
Small	A	65.94	8.38
	B	64.74	10.36
	C	66.25	9.02

school differences, product-moment correlations were run independently for three different schools—a large experimental school, a medium-sized control school, and a medium-sized experimental school. (These were the schools for which there were complete data for the most males.) The correlation coefficients described above are presented in Table 5.

TABLE 5. Correlation Coefficients Between Gain Scores and Scores on "Matching Tests"

Group	Calif. Math	Calif. SSHA			Physics			California Mental Maturity			Math-Sci. Teacher			Physicist		
		Pretest	Gain	SSHA	Pretest	Gain	SSHA	Non-L. Lang.	Total	Pretest	Gain	SSHA	Pretest	Gain	SSHA	Physicist
Gain—Physics	X	.806	.523	.048				.340	.736	.702	.353	-.193	.141	.195		
	Y	.024	-.154	-.316				-.086	.173	.046	.191	-.364	.005	.109		
	Z	.202	.347	-.123				.200	.409	.370	.441	-.190	-.197	.193		
Gain—Math-Sci. Teacher	X	-.244	-.265	-.150	-.193	-.080	-.178	-.169	-.597				-.021	-.194		
	Y	-.005	-.169	-.168	-.364	-.037	-.167	-.124	-.472				.014	.033		
	Z	-.161	-.075	-.116	-.190	-.256	-.185	-.263	-.593				-.030	.086		
Gain—Physicist	X	.160	.282	.059	.195	.116	.351	.308	.428	-.194	-.698					
	Y	-.040	-.285	-.541	.109	-.193	-.372	-.347	.293	.033	-.871					
	Z	.333	-.128	-.141	.193	.160	.144	.182	.381	.086	-.895					

For the most part, there is good agreement among the schools on the correlations. For example, between physics gain and mathematics-science teacher gain, the correlations are  $-.193$ ,  $-.364$  and  $-.190$ . In a few instances, however, there is great divergence in the correlation; e.g., between the *California Mathematics Test* and physics gain, the correlations are  $.806$ ,  $.024$  and  $.202$ . In this particular instance, scatter diagrams were constructed to try to obtain clues as to the reason for this spread of correlations. However, the diagrams gave no additional information since they simply presented the appearance of diagrams representative of these correlations. There were no appearances of curvilinearity, unusual grouping, or any other idiosyncrasy which might aid in explaining this variability of relationships.

Of the correlations obtained for these samples for physics gains, the most consistently positive correlations were for the linguistic score of the *California Test of Mental Maturity*:  $.736$ ,  $.173$  and  $.409$ , with the total score for this same test showing essentially equivalent relationships. Strong positive correlations were also evidenced in one or more schools between physics gain and the *California Mathematics Test* and the *Brown Holtzman Survey of Study Habits and Attitudes*. However, since the total score of the *California Mental Maturity Test* also showed high correlations with mathematics ( $r = .752$ ) and study habits ( $r = .394$ ), only mental ability was used for matching purposes.

Of the correlations obtained for these samples for the interest gain scores, only those between the gain in a specific interest and the pre-test for that same interest were consistently significant. Between the pre-test and gain scores for mathematics-science teacher interest, the correlations were  $-.597$ ,  $-.472$  and  $-.593$ . For physicist interest, the pre-test and gain correlations were  $-.698$ ,  $-.871$  and  $-.895$ .

From these correlations, it is readily seen that those who scored high initially made little gain when compared with those who scored low initially. In fact, inspection of individual scores showed that almost invariably the individual who scored high initially decreased substantially on the post-test, while the person who scored low initially almost always made a large gain on the post-test. Indeed, it seems quite possible that these scales have relatively little meaning for the majority of the students sampled in this study.

#### *Comparison of Physics Gains for Experimental and Control Groups*

*Unmatched Groups.* The ultimate criterion in such a study as this must inevitably be a comparison of achievement gains—which method produced greater increases in knowledge. The simplest answer to this proposition is a comparison of achievement gains, by groups, with no controls applied. This is done in Table 6.

TABLE 6. Mean Scores by Size of School for "Gain in Physics" and California Mental Maturity Test—Total

Size of School	California Mental Maturity		Gain in Physics	
	Experimental	Control	Experimental	Control
Small	61.05	66.25	9.34	10.66
Medium	75.63	73.01	13.23	21.30
Large	71.37	75.41	17.50	23.49

From Table 6 it is seen immediately that the gains are consistently higher for the control than they are for the experimental groups. However, it should also be noted that, except for the students from the medium-sized schools, average mental ability scores are also higher for the control schools. Thus, at least for the large and small schools, it becomes necessary to match groups on the *California Mental Maturity Test* before comparing gains.

*Matched Groups.* Gains for matched groups from large, medium-sized, and small schools are presented in Table 7. Comparisons of experimental and control gains are made for three groups—students from small schools, students from large school "A," and students from large school "B." Large schools A and B are the only schools where the same teacher had both experimental and control groups so that in some ways they provide the most highly controlled comparisons which can be made

TABLE 7. Comparison of Gains in Physics Scores for Matched Experimental and Control Groups

Group	N	Mean Scores		t	P
		Experimental	Control		
Small Schools	33	8.94	10.24	.94	P>.05
Large School "A"	17	20.76	25.53	1.52	P>.05
Large School "B"	35	19.43	20.71	.69	P>.05
Medium Schools	66	13.71	21.12	5.15	P>.01

in this study. In all other comparisons, there are teacher and school culture differences both of which apparently have assumed large proportions in this study.

Tables 7, 8, and 9 should be interpreted as follows: *t* ratio is an inferential statistic. Depending upon the cases involved, *t* must be 2.00 to be significant at the 5 per cent level ( $P = .05$ ).  $P = .05$  means that there are five chances in 100 that a difference this large would occur due to sampling error if there is no difference in the means of the population from which these samples were drawn.

Data shown in Table 7 indicate no significant differences in gain scores between matched experimental and control groups for large and for small schools. However, there is a large, significant difference in the medium-sized schools favoring regular teaching methods. Why this difference occurs for medium-sized schools and not for the other two is not known. (Of course, if the third, large experimental school were added to that experimental-control comparison, that difference would also be significant. However, it seemed appropriate to compare only the two schools where there were common teachers for the two conditions.)

In getting proper perspective of comparisons between experimental and control groups, it seems appropriate also to compare gains in two large experimental schools, both of which have experienced teachers. In this instance, comparison of matched groups for these two schools, as depicted in Table 8, shows a significant difference favoring School B.

TABLE 8. Comparison of Gains in Physics for Matched Groups from Two Large Experimental Schools

School	N	Mean Gain Scores	t	P
B	30	20.0	2.92	P>.01
C	30	13.23		

Thus it is seen that, even in the same experimental situation and where the role of the teacher is kept at a minimum, there may be differences in gains. Whether this difference is due to the teacher, or perhaps the school-culture, which may dictate achievement, is not known, but it does indicate a real danger in making inter-school comparisons.

*Differences in Gains by Ability Levels*

The suggestion has been made that there may be a differential advantage of the physics films according to ability level. To check this possibility, gain differences between experimental and control groups for large school B were compared for three ability levels—high, medium, and low. Since Engelhart<sup>1</sup> found that high and low ability students responded similarly (TV instruction relatively less effective) and that they both differed from the middle ability group, this same comparison was made, the results of which are given in Table 9.

TABLE 9. Comparison of Differences in Gains (Control Minus Experimental) for High and Low Ability Groups Versus Middle Ability Groups

Group	N	Mean "Control Minus Experimental" Gain	t	P
High and Low	20	3.55	1.42	P > .05
Middle	15	-1.73		

While the gain differences, control minus experimental, are in the same direction as that found by Engelhart, this difference is not significant. Comparison was made for only the one school because of the inter-school differences apparent in the current study.

In conjunction with consideration of the ability levels, it is of interest to note that, in response to a questionnaire given toward the end of the course, fewer high ability students,  $\chi^2 = 8.51$ ,  $P < .05$ , expressed the opinion that physics could be taught effectively using the films exclusively ( $\chi^2$  - Chi square - is an inferential statistic used with counted rather than measured data. In this instance,  $\chi^2$  must be approximately 4.00 to be significant at the .05 level.)

*Size of School*

It is readily apparent from Tables 2 and 6 that there are important ability and achievement differences related to size of school. Why this is the case is not completely clear. However, analysis of a questionnaire answered by students in the experimental schools gives some clues. Students from large schools did not rate the filmed course as well as did the other students,  $\chi^2 = 43.05$ ,  $P < .01$ , nor the filmed laboratory as well in comparison with their regular laboratory,  $\chi^2 = 29.66$ ,  $P < .01$ . Students from medium-sized and large schools reported greater use of text,  $\chi^2 = 15.81$ ,  $P < .01$ , more effective use of the time after the films,  $\chi^2 = 44.11$ ,  $P < .01$ ; and a greater percentage of laboratory assignments being completed,  $\chi^2 = 28.27$ ,  $P < .01$ . (None of these Chi square figures are significant at the five per cent level.)

<sup>1</sup> Engelhart, Max D; Schwachtgen; and Nee, Mary M. *The Chicago Public Schools Television Instruction Experiment in High-School Physics*. A mimeographed report. Chicago Public Schools, Chicago, Illinois.

Thus, it is seen that students from medium-sized and large schools who made greater achievement gains tell of more intensive teaching procedures being used in their schools. Perhaps this is the answer to the superior gains of the larger schools—greater work-effort requirement.

#### *Comparison of Interest "Gains" for Experimental and Control Groups*

While there were certainly achievement gains associated with the physics course, whether taught *via* film or regular pedagogical procedures, no such definitive gain appeared for interest test scores, results for which are presented in Table 10.

Indeed, when the constant of 200, which was added to make all gains positive, is subtracted from each of the mean scores, it becomes apparent that the means for physicist interest are mostly negative. Perhaps this simply represents a healthful awakening to the true character of the occupational requirements. At any rate, interest in becoming a physicist appears to have lessened. At the same time, there seems to have been some mild increase in appreciation of the possibilities of being a mathematics-science teacher, as evidenced by the modest interest gains shown in Table 10.

While the groups compared in Table 10 were not matched, examination of Table 2 indicates relatively small inter-group differences on physicist interest. None of the comparisons made in Table 10 proved to be significant, indicating that there is likely little difference from an interest standpoint in film *versus* regular instructional methods.

#### *Dropouts*

A frequent criterion of the success of a program is the percentage of beginners who actually complete the requirements for the course. While complete data are not available on this item, there is information on the number of those who took the fall test who also took the spring test. These data are summarized in Table 11.

TABLE 10. Comparison of Gains on Strong for Experimental and Control Groups<sup>a</sup>

Scale	School	Group	N	Mean	t	P
Mathematics-Science	Small	Experimental	62	236.0 <sup>b</sup>	.614	P>.05
		Control	23	223.9		
	Medium	Experimental	68	218.7	.075	P>.05
		Control	85	218.1		
	Large	Experimental	81	209.9	1.417	P>.05
		Control	52	224.0		
Physicist	Small	Experimental	62	186.3	.847	P>.05
		Control	23	196.5		
	Medium	Experimental	68	200.3	1.851	P>.05
		Control	85	184.7		
	Large	Experimental	81	171.9	.717	P>.05
		Control	52	179.0		

<sup>a</sup> Only men were used in these comparisons.

<sup>b</sup> For purposes of analysis, 200 was added to each raw score gain. Thus to obtain actual mean gains, 200 points should be subtracted from each of these means.

TABLE 11. Comparison of Dropouts for Experimental and Control Groups

	<i>Small Schools</i>		<i>Medium-sized Schools</i>		<i>Large Schools</i>	
	<i>Experimental</i>	<i>Control</i>	<i>Experimental</i>	<i>Control</i>	<i>Experimental</i>	<i>Control</i>
Dropout	19	9	12	5	18	13
Complete	86	33	73	81	96	62

While many students failed to take the second test, and as a result are considered dropouts, there does not appear to have been a differential, experimental versus control, basis for this. Chi squares for individual groups were .21, 3.38 and .08 for small, medium, and large schools, respectively.  $\chi^2$  for the total was .74.

The criterion of dropouts does not give evidence then of there being a difference in the effectiveness of the two types of instruction.

#### *Questionnaires.*

In addition to the regular test data, questionnaire information was obtained from the students and teachers in the experimental schools. The questionnaires used were constructed by the American Institute of Physics for use in evaluating the *Harvey White Physics Films*.

In general, responses on the questionnaire indicated satisfaction with the films. For example, 60 per cent of the students questioned said that they rated the filmed physics course "much" or "somewhat" better than other science courses in their school and 86 per cent said the film lecture material was "about right" in difficulty. However, 41 per cent of the students said that, if they had it to do over again, they would take "physics as usual," 62 per cent said that physics would be taught "poorly" or "impossible" by the films exclusively, and 30 per cent said that they were bothered "much" by not being able to break into the film lecture to ask questions.

While teachers rated the films quite well, their ratings tended to be less positive than were those of the students. Despite few classroom routine or mechanical dissatisfactions (only one teacher said that mechanical difficulties created a problem, none said that discipline was difficult, none said that the errors in the films were serious, and all except one said the lectures and laboratories were about right in difficulty.), three of the eight teachers responding felt that course objectives would be poorly met with films, three felt that the films provided only a poor substitute for the high-school laboratories, and only three said a whole filmed course definitely has a place in the high-school curriculum. All eight instructors would prefer to use only selected topics from the films.

If it can be assumed that the better prepared teachers, with adequately equipped laboratories were responsible for the negative replies, this still leaves a number of teachers with less preparation in small schools,



probably ill-equipped, who answered the questionnaire positively and who feel that filmed courses would be of real value in their schools.

#### SUMMARY AND CONCLUSIONS

In order to determine whether it would be possible to use the *Harvey White Physics Films* in schools with inadequately prepared instructors and ill-equipped laboratories, a study was conducted utilizing ten experimental schools (classes taught *via* the film) and ten control schools (classes taught using regular methods).

Very large inter-school differences on all variables—mathematics and physics knowledge, study habits, mental ability, and interests—prevented over-all analysis of matched groups. However, comparison of achievement within sub-groups—large schools, medium-sized schools, and small schools—showed significant differences in achievement gains only for the medium-sized schools where students taught by regular instructional methods made more improvement than did those taught with films. There were no differences in interest modifications for the two groups and there was no difference in the dropout rate from the physics course. There was some tendency, non-significant, for students of medium ability to do relatively better with film instruction.

Both students and teachers responded positively on a questionnaire dealing with their satisfaction with the film course. Student responses were quite favorable, with instructor responses probably being tempered by individual preparation and experience in physics.

The conclusions from this study are necessarily limited because of the impossibility of obtaining adequately matched groups. Within this framework, the following tentative conclusions are suggested:

1. Physics can be taught successfully by film. Achievement gains are probably determined more by student ability, instructor competence, and school culture than they are by the nature of the instructional program.
2. Regardless of instructor competence and adequacy of laboratory, any school could profitably use a selection of the films.
3. Schools with untrained physics instructors and inadequate laboratory equipment would benefit from using a large majority of the *Harvey White Physics Films* as the basic point of departure for their physics course. However, they should be cognizant of the same need for using sound instructional procedures with the films that there is for these same procedures with regular pedagogical methods.

### C. The Core Curriculum Project

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THE term core curriculum is surrounded by various opinions as to its definition, nature, and function. In order to clarify the goals of the Utah study, the project committee developed a statement which embodied the consensus as defined by the general literature and by experts in the field of core curriculum. A descriptive outline follows of the work of the Weber County core program as devised for the school year 1957-58:

- 1.. Teachers met the pupils involved in the program during at least two academic study periods each school day.

2. The learning activity content of the program was based upon the problems that seemed to be of highest interest and importance to the pupils. These problems provided the focal point for the development of the learning activities. And thus the core class was intended to center the learning process around the general interests of the adolescent, around his felt and assumed needs, and around his individual stage of growth and development.

3. Considerable emphasis was given to teacher-pupil planning. The dynamics of group situations were encouraged and democratic processes were put into practice in defining, developing, executing, and evaluating problem-centered learning activities.

4. A strong emphasis was placed upon the personal problems of the pupils to relate themselves more effectively to their peers. Teachers were encouraged to create a warm, supportive, learning climate wherein they themselves could strive to become intimately acquainted with their pupils and consequently to adjust the learning experiences to the special needs of their students.

5. The organization of subject matter of language arts and Utah history included in the core classes was planned to stress the special nature of the instructional activities, to encourage the application of the instruction to life situations, and also to increase the use of the knowledge and skills gained by the pupils. However, the subject matter did not provide the basic focal point of the instruction, as has commonly been the case in the traditional, subject-centered school situation of the past.

#### PURPOSES OF THE STUDY

In the core teaching, the stated purposes of the project are designed for a better utilization of teacher time. The core organization provides a more economical utilization of teacher time. Such utilization is defined as follows. The time of teachers is better utilized when:

1. Pupils learn at what is considered to be a satisfactory rate of speed.
2. The personal problems of pupils are receiving the kind of attention and studied consideration that results in their resolution.
3. Pupils relate themselves more effectively to their peers than they do under the traditional system.

4. Teachers organize learning activities on a problem solving basis.

5. Teachers themselves realize the degree of satisfaction in their work which results in high morale.

A summary of the first year's activities in Weber County may be divided into five general areas: (1) in-service training activities of teachers; (2) development of resource units; (3) measurements of pupil responses; (4) teacher reactions and responses; and (5) implications for a continuation of the second year of the study.

#### IN-SERVICE TRAINING ACTIVITIES

The core curriculum project of Weber County was initiated with a workshop which was designed to help teachers to understand some of the essential principles and practices of core teaching. It was also planned to create insight into some of the problems involved in initiating a core program in the junior high schools. Thus, the preparation of teachers for the role they were to play in the project was the first task of the directors of the study. The workshop was followed by a class which was held during the fall and winter quarters.

The class, which met weekly, was under the direction of the Dean of the College of Education, University of Utah, and the district superintendent. The course of instruction emphasized the nature of group dynamics. It also explained the teacher's role in directing his pupils along the lines suggested by the core curriculum. The class developed the basic framework and the outline for the type of core program to be introduced into the junior high schools of any given district.

During the second quarter class, subject matter areas were outlined with the specific purpose of relating them to the core program and to the resource units as based upon the problems of junior high-school students. The project consultant helped the teachers to define a philosophy of core teaching and to integrate this ideology into the basic framework of the outline for the resource units. A sample resource unit was developed as a format and also as a guide for the completion of the remaining units.

Wherever an evaluation of the year's work was undertaken, the total in-service training activities program was consummated in a series of meetings which included the administrative staff, the principals, and the teachers involved in the program. Plans were also formulated to initiate the program for the second project year. Throughout the study, teachers were constantly made aware of the possibilities of a more effective use of their time and talents.

#### DEVELOPMENT OF RESOURCE UNITS

The specific subject matter areas of the core program were designed to include language arts, social studies, orientation of pupils toward the school, and their guidance. The resource units, planned to become problem centered, were based upon the supposed needs of junior high-

school youth. Desired behavioral outcomes were formulated as a foundation of the resource units in terms of objectives or goals to be achieved by the pupils involved in the program. These behavioral goals took into account the basic subject matter skills, the basic understandings and appreciations, and the hoped for growth patterns of the pupils in the pilot schools. The learning activities of the year were outlined in a series of nine resource units. The objectives and behavioral goals to be realized ideally in each of these units were specifically outlined and listed in logical order according to principles of well-recognized teaching and learning procedure.

Skilled personnel who had experienced special training in counseling and orientation, in language arts, and in teaching social studies were invited to assist in developing the behavioral goals and objectives of the various resource units. The first unit developed as a pattern was written up and presented to the entire group for criticism.

In a special two-week summer workshop held after the close of school, the nine resource units to be used during the school year 1958-59 were completed in tentative form. In the workshop, teachers were organized into working teams. Each team was asked to develop a particular unit. When a unit had been prepared in its preliminary state, the entire group met to study the form and to offer criticisms and suggestions for its improvement. This procedure was followed by a revision and a rewrite of the unit. In their tentative form all the units were duplicated to be used on a trial basis during the school year 1958-59.

The plan for the second year of the program is to see that teachers meet once a month to offer further criticism and to make suggestions for the continued improvement of the resource units. The project committee hopes that these resource units will provide a significant basis for the work of the core teachers. The committee hopes to see the units still further revised by the spring of 1959.

#### MEASUREMENTS OF PUPIL RESPONSES

In order to measure the academic rate of learning among the Utah pupils of the core program, the California Achievement Test, Form W, was administered in April 1958 to all seventh-grade pupils in the pilot schools. The test revealed a mean achievement score of 7.21 for the entire group, as expressed in terms of grade placement norms along academic lines. The national grade placement norm on the same test is 7.7. During the school year 1958-59, the same test will be given on the comparable date to the experimental core class. Comparisons can then be made on the effects of the new program.

A sociogram was completed by the core teachers for each seventh-grade pupil involved in the project. The resultant picture revealed how effectively each of these seventh-grade pupils was relating himself to his peers. Sociometric scores were computed for each pupil to determine a criterion of social measurement. The following scale was used to

determine the position of each individual in the sociometric scores: first choice, 5 points; second choice, 4 points; third choice, 3 points; fourth choice, 2 points; and fifth choice, 1 point.

The total sociometric pattern for each pupil was constructed and a total sociometric score based upon the point system was computed for each pupil. Based upon this point system, the total sociometric pattern for each pupil in a class group was constructed. This pattern was expressed in a point score for each pupil. (See Figure 1 for sample sociogram.)

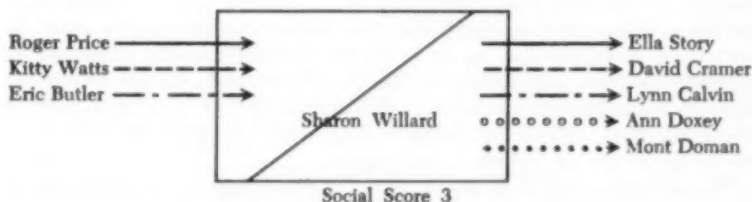


Fig. 1 Sociogram

Sociometric Score Allowed

- 1st choice 5 points
- - - - -→ 2nd choice 4 points
- · - · -→ 3rd choice 3 points
- o o o o o→ 4th choice 2 points
- · · · ·→ 5th choice 1 point

Key: Arrows pointing in are pupils selecting this individual as a preferred associate.

Arrows pointing out are this individual's selection as a preferred associate.

The project committee arbitrarily decided that pupils receiving a total sociometric score of 5 points or less would be considered to be social isolates. Out of 694 seventh-grade pupils in the Utah program, 101 were found to be social isolates. This number constituted 14.5 per cent of the total pupil enrollment in the program conducted by the pilot schools. This figure will be compared with the comparable figure for seventh-grade pupils in the core program for the 1958-59 studies.

The extent to which the experimental program made it possible for teachers to help pupils in solving some of the problems of the boys and girls in their classes was believed to be of significance in this project. For this purpose, the *Mooney Problem Check List* was administered to all boys and girls who were participating in the program. The results of this problem inventory were quite revealing.

The following block of five problem items received more checks from both boys and girls than did any other group of problem items in the check list:

- Afraid of failing in school
- Trouble with arithmetic
- Trouble with spelling or grammar
- Slow in reading
- Trouble with writing

It was also significant to note that both boys and girls indicated the following block of items to be the second most frequent source of problems:

Not spending enough time in study  
Too much school work to do at home  
Can't keep my mind on my studies  
Worried about grades  
Not smart enough

Other blocks of problem areas dealing directly with school were then checked as the third area considered to be a problem area to both boys and girls. Thus, it was found that the three most frequently checked sources of problems had to do with school relationships, problems of boy-girl relations, and family problems. Other areas in the check list were of secondary significance in the minds of the boys and girls as compared with school problems which were checked for the overwhelming source of trouble to the pupils.

The individual problem check lists and computations by class groups were saved for future reference. It is intended that a comparison of the responses of seventh-grade pupils in the 1957-58 program with those in the 1958-59 program will be made at the conclusion of the second year of the project. Any changes in the problem area patterns of pupils who are recipients of instruction under the experimental program will be noted and the information will be interpreted as being significant or insignificant in the total picture.

#### TEACHER REACTIONS AND RESPONSES

In an effort to gather data which would be of value in appraising teacher time utilization and over-all reactions to the experimental program, the following information gathering activities were completed during the year. The information will be used as a basis of comparison with data in pre-experimental teaching.

1. Counselors in the junior high schools kept an actual stop-watch account of the time that teachers in the experimental classes spent doing specific teaching tasks.
2. Interviews were held with teachers to determine morale, job satisfaction, and general responses to the program.
3. Teachers were encouraged to keep anecdotal accounts in personal journals of their activities and responses in classroom activities.
4. Personnel data sheets of teachers in the program were obtained which gave complete information concerning the background and professional preparation of each one.
5. Teachers were visited by the district guidance director and observed in their classrooms during actual classroom teaching performance. A record in a predetermined pattern was made of each visit.

The structured interview revealed that teachers participating in the program had feelings of apprehension and concern about changes that the program might make in their regular teaching routine and pro-

cedures. This conclusion was drawn from the direct and indirect responses received by interviewers as they sought answers to the following questions:

1. To what degree has the core program enhanced and utilized the counseling and guidance services?

2. To what degree has the core program utilized the interests and needs of adolescent youth as a focal point for developing learning activities?

3. To what degree has the core program utilized the fusion of several bodies of knowledge from varied subject matter areas to help in the solution of student centered problems?

4. To what degree has the core program provided for the development of democratic processes in defining and developing learning activities through pupil-teacher and pupil-pupil planning?

5. To what degree has the core program provided an environment in which responsibility for accomplishing learning activities and carrying out plans for learning are assumed by the pupils through careful guidance by the teacher of pupil leadership?

6. To what degree has the core program encouraged the participation of all pupils in the evaluation of outcomes and the effectiveness of learning in the classroom for themselves and for the class as a whole?

7. To what degree has the core program helped to develop skill in individual and group research where a very wide variety of materials are used in the classroom, laboratory, and library as pupils seek solutions to problems of interest to themselves and their peers?

8. To what degree has the core program given teachers opportunities to become better acquainted with the students as a result of a smaller group and a longer block of time?

9. To what degree has the core program helped to individualize the learning experience for each pupil by providing a warm and supportive climate wherein pupils may freely participate and develop a sense of belonging to the group and may not feel isolated?

10. To what degree has the core program provided opportunity to acquire, develop, and improve the basic skills and abilities?

11. Will you please make any other statement that you wish to make about the core program?

Teachers generally felt that the theory and philosophy behind the core program were sound. However, there was much apprehension concerning how it could be applied to the actual situation. Teachers acknowledged that they were not accomplishing to a marked degree many of the outcomes stressed in the foregoing questions. Teachers did, however, feel that they were learning to understand their pupils better in the long block of time. They felt that they were becoming more conscious of pupils as individuals and were, therefore, shifting some of their attention and allegiance to the pupil instead of to the subject matter that was to be taught.

Many criticisms of the physical plant limitations were voiced. Teachers expressed a need for movable desks so that group work could be carried out. A desire for a greater abundance and variety of teaching materials was also expressed quite strongly.



## IMPLICATIONS FOR CONTINUED STUDY

Teachers expressed a desire to know more about core teaching philosophy and practices before actually entering into a core program. The fact that teachers were encouraged to try some of the principles of core instruction in their classes at the conclusion of the the workshop resulted in some frustration. A longer period of orientation and in-service training should precede actual attempts at core teaching. This was one very important lesson learned by administrators during the first project year, and it was pointed out, time and again, through the structured interviews based upon the questions listed above.

Teacher responses to informal and structured interviews have been placed on record. At the conclusion of the second year of the project, these responses will be compared with testimony of teachers concerning their job satisfaction and their opinions on time utilization.

The actual instructional duties of teachers were categorized under seven headings and the time spent in each of these tasks was recorded. Results of these actual time measurements as made by the counselors in the junior high schools are as follows:

1. Classroom administration and management (checking roll, passing materials, arranging seating, making routine announcements, and other managerial activities) . . . 2 minutes and 29 seconds, average time per class period.

2. Instructional leadership, motivation, and presentation (leading pupils in the day's learning activities, motivating for interest, review of previous day's work) . . . 5 minutes and 10 seconds, average time per class period.

3. Guiding pupil discussions and idea interchanges (guiding pupil discussions, commenting and leading to more discussions, guiding to obtain objectives of learning activities, *etc.*) . . . 13 minutes and 14 seconds, average time per class period.

4. Supervision of study, investigation, and pupil material presentation (supervising pupils' research and library work, investigation and study activities, reading and report writing activities) . . . 15 minutes and 48 seconds, average time per classroom period.

5. Supervision of drill and skill building (developing grammar skill, punctuation skill, spelling, and other tool subjects development) . . . 4 minutes and 55 seconds, average time spent per classroom period.

6. Evaluation of results of learning activities (questioning, testing, and re-checking) . . . 5 minutes and 0 seconds, average time per classroom period.

7. Preparation and planning (actual preparation and planning for each core program class session) . . . 1 hour and thirty minutes average time per day.

The above time measurements are admittedly of limited significance at present. However, it is intended that these measurements will be compared with future stop-watch counts of the time that teachers spend in the categories listed above. Any significant changes as teachers move more closely to actual core teaching practice will be noted and appropriate conclusions will be drawn.

## CONCLUSIONS

Summarizing statements based upon the first year of a two-year experimental study are admittedly premature. However, certain basic assumptions seem to be warranted at this time.

1. It has been demonstrated that the time and talents of teachers are utilized to better advantage in transcending the traditional type of seventh-grade classroom teaching for the core type curriculum when the latter process has been preceded by a definite period of orientation to and instruction in the new type of work.
2. In the future, the frustrations and apprehensions experienced by the teachers involved in the Weber County experiments should be avoided. As a result of the understanding gained by both the teachers and the committee, the experimental work should progress on a far smoother plane. The future should be insured by the insight that has been acquired concerning the needs of the core work and the manner of preparation for conducting the projects.
3. It has been seen that teachers require guidance and certain periods of time for the preparation of resource units for the problem-solving, child-centered type of core teaching.
4. Also, it has been determined that a teacher's self-confidence is encouraged through his participation in the preparation of resource units prior to the application of the experimental work in the classroom. The specific strengths of the various units may not be determined at present. Admittedly, such a reckoning must of necessity await further classroom experimentation.
5. But it has been amply demonstrated that the time and efforts of teachers are utilized to a higher degree through the co-operative approach than they are in the processes of the usual traditional subject matter approach. The cooperative approach has been proved constructive in the gathering of lesson references and the organization of materials. A teacher's pedagogical assets are greatly increased when he himself has become oriented to his work through an awareness of the goals to be reached as determined by a definitive classroom program.

Conclusions to be drawn from measurements of scholastic achievement and social interaction as a result of core teaching will also depend upon the data to be gathered during the second project year. However, subjective evidence based upon present personal evaluations seems ably to warrant the statements made in the hypotheses of this study.

D. Utah Develops *Junior High School Criteria*  
Partially as an Aid in Improving Staff Utilization

SIDNEY L. WYATT

JUNIOR high-school people in the State of Utah feel that the *Criteria* we have worked on so long have been validated. The work has at times aroused mixed emotions. From the inception of the idea five years ago to the present time there have been periods when I and those who have worked so faithfully with me have felt a sense of real accomplishment. There have been many other times when we have felt that only rashness and shortsightedness could have involved us in the study.

As an officer of the Secondary-School Principals' Association of the State of Utah, I was given the responsibility of working with the director of secondary education in making this study. We were instructed to set up a Criteria Committee of five for the purpose of producing an instrument. This committee felt that a matter of months would accomplish our task and we could then write *finis* to the project.

The study has not only involved the Secondary-School Principals' Association and the state school office—including all state curriculum committees—but also the three major universities of the state and the entire profession on the junior high-school level. Boards of education and parent-teacher groups have also entered the study.

BACKGROUND OF REPORT

As reported in the January 1958 BULLETIN, the study to develop a *Junior High-School Criteria* in the State of Utah was instituted because of a demand by junior high-school principals and teachers for an authority that would indicate the characteristics, needs, and functions of this important segment of our public school system. After a survey of the field, it was the feeling of those concerned that there was a lack of an instrument that would fit our needs. As a result, the Criteria Committee was organized to develop such an instrument. Working directly through the office of the state superintendent of education, and enlisting the aid of those agencies aforementioned, committees were set up on all subject-area and service area fields. Approximately one hundred and fifty people have been involved over a period of two years. At least one meeting was held each week, even during the summer vacation period. Slowly the sections of the instrument were developed and in April 1956 was completed. A trial run was then given it in evaluating the Wahlquist Junior High School in Ogden. It was under this organization that the tentative edition of the *Criteria* was finished.

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Sidney L. Wyatt is Principal of the Wahlquist Junior High School, Route 3, Ogden, Utah.

### FURTHER AID SECURED

Financing of the study to this point had been attempted by the Utah Secondary-School Principals' Association. Their funds were now depleted and it seemed to us that, because of lack of finances, it would be difficult to refine and publish the instrument. At this time of discouragement, we were offered encouragement and financial help from the National Association of Secondary-School Principals' Commission on the Experimental Study of the Utilization of the Staff in the Secondary School. Our then state director of secondary education, Wilburn N. Ball, was instrumental in securing aid in the form of a grant. This financial aid was channelled through the Utah secondary-school principals' organization, which was responsible for its expenditure and for the continuation of the project.

### PURPOSES

The Central Committee, an organization created by the state Secondary-School Principals' Association, as a policy making body for the project, reviewed and authorized plans for the continuance of the study. The purposes of the project as stated are:

1. To validate the *Criteria* and make necessary revisions prior to final publication.
2. To determine the effectiveness of the *Criteria* as an instrument for up-grading the junior high schools.
3. To determine the effectiveness of the *Criteria* as an instrument for improving the in-service education and professional growth of all school personnel.
4. To use the *Criteria* as a basis for evaluating and modifying present practices and procedures so that the needs of the junior high-school pupils may be more adequately met and the time and abilities of staff may be utilized more effectively.
5. To determine the feasibility of requesting the State Board of Education to adopt the *Criteria* as the official instrument for the evaluation of the junior high schools of Utah.

### PROPOSALS FOR ADOPTION

At the July 26, 1958, meeting of the State Board of Education, State Assistant Superintendent Wilburn N. Ball presented to the State Board of Education the following recommendation: "When the work of evaluation and validation of the *Evaluative Criteria* has been completed, it is proposed that the document be submitted to the State Board of Education for adoption as an official instrument for the evaluation of the junior high schools of Utah."

The Utah Secondary-School Principals' Association and the Junior High-School Evaluative Criteria Committee are of the opinion that the chief value of the use of the *Criteria* will be the up-grading of the junior high schools in Utah and the improvement of in-service educa-

tion and professional stature of all personnel. This value will be achieved through using the *Criteria* to:

1. Determine the characteristics of a good junior high school.
2. Appraise the effectiveness of the junior high-school program in terms of its objectives.
3. Determine the means and processes by which improvements, where needed, can be effected.
4. Assist in such continuous growth as will merit consideration for state accreditation for the junior high school.

The Secondary-School Principals' Association believes that the official adoption of the *Criteria* will give prestige to the document and will thus enhance its value not only to the junior high schools of Utah, but also to schools outside the state where there is already evidence of wide-spread interest in the use of the material being developed.

The State Board of Education took the following official action: "It was moved by member Leonard L. Bishop and seconded by member Mrs. Madeline B. Wirthlin that the committee be commended on the fine work it has completed and encouraged to continue with the project.

#### VALIDATION

A validation committee was next appointed and charged with the responsibility of validating the instrument. This committee felt that there were a number of primary steps to be taken in order to gather material for the final revision:

#### PILOT SCHOOLS EVALUATION

Three pilot schools were selected from among those volunteering for the study. The assistant executive secretary of the Central Committee was chairman of the validation committee and the director in each case. One of the schools, the Bear River Junior High School at Tremonton, was assigned the Utah State University as the sponsoring institution for the evaluation. Dr. Terrance Hatch of the University and Elmer Archibald, a member of the *Criteria* Committee, acted as co-chairmen. A steering committee, as provided by the *Criteria*, was set up by the faculty. Using the instrument as a guide, the major part of the school year was used in evaluating the school. The first evaluation was by the faculty. As the faculty members evaluated their school in terms of the *Criteria*, they also evaluated the *Criteria* in terms of a *Criteria To Evaluate the Criteria* which had been prepared. Each of the subject-area sections as well as the service-area section was examined and a written report was tendered to those in charge.

The next evaluation of the school and the *Criteria* was by the student committee under the direction of parents, using a form provided in the *Criteria*.

The third evaluation was by the Parents' Visiting Committee, who spent one week in the school. They also used a form provided by the *Criteria*.

The final evaluation of the school was by the Educationists Visiting Committee. This committee was composed of forty-two specialists in junior high schools from universities, the state school office, administrators, and teachers in the junior high schools of the state. This group of educators was organized into sub-committees for each subject and service-area in the school. As with other evaluations, these committees evaluated the *Criteria*, as well as the school, using a prepared check sheet as a guide, as well as making specific comments. They were in the school for three days.

At the conclusion of the visit of the educationist committee, a report was made, both orally and in writing, to the school faculty, administration of the school and school district, the board of education, student, and parents. Later this report, which contained an appraisal of the school and its products in terms of generally accepted junior high-school standards was compiled and published. Commendations for outstanding work as well as recommendations for improvement were included. *Particular emphases were placed on the utilization of teacher competencies and time.* This report has been completed and distributed to those concerned.

### THREE OTHER SCHOOLS EVALUATED

The same procedure was followed in the evaluation of the Lincoln Junior High School at Orem, Utah. The University of Utah was the sponsoring institution with Dr. Paul Hansen of the faculty and Mark C. Lloyd of the *Criteria* Committee as co-chairmen.

The Springville Junior High School of Springville, Utah, was the final pilot school to be evaluated. The Brigham Young University was the sponsoring institution in this case. Dr. Sterling Callahan of the faculty and John Mower of the *Criteria* Committee being co-sponsors.

A fourth pilot school—The Wahlquist Junior High School of Weber County School District—was evaluated previously as a trial run as the tentative *Criteria* was being completed. The sponsoring agency in this case was the Utah state school office.

When the written report from the educationist committee was received, the faculty members of the administrative staff and parents studied it as well as the other evaluations. Among other things the reports contained: *Attributes deemed most commendable, improvements considered most desirable, and a suggested plan of action.*

Each school then drew up a *Plan of Action* to be followed as a result of the school evaluation. This report contained: first, the list of *Improvements Considered Most Desirable* made by the committees, and second, a *Plan of Action* to deal with each suggestion. Some improvements were simple and could be effected quickly, others were of a long-range nature. A sample of the plans of each of three schools is inserted:

## LANGUAGE ARTS FROM THE LINCOLN HIGH SCHOOL

A. *For the School District:*

1. Funds should be made available to correct deficiencies in the physical plant.
2. Every teacher should be given a preparatory period during the day in which to do planning.
3. More adequate library facilities should be provided.

B. *For the School Administration:*

1. A better total coordination of the total language program is needed. A departmental chairman might be appointed.
2. Care should be taken to prevent overlapping by grade and subject areas.
3. There is need for development of a program for students of superior ability.
4. Students should be screened according to individual reading difficulties by groups and homogeneous grouping should be used.

C. *For the Teacher:*

1. The teacher is to assist the administration in carrying out the above suggestions.
2. Careful attention should be paid to correctness in spelling, grammar, composition, and writing.
3. Students should direct and produce plays as a result of their work.
4. All written material should be edited by the teacher.

D. *Recommendations Acted Upon and Accomplished:*

1. Departmental chairman were chosen for 1958-59 and meetings are to be conducted periodically according to subject areas.
2. Library-literature courses were amalgamated with existing core programs.
3. Grouping of superior students has been accomplished.
4. Screening of retarded readers has been accomplished. New special teachers were employed for 1958-59 to assist with program.

## SCIENCE FROM THE BEAR RIVER JUNIOR HIGH SCHOOL

A. *Suggested Improvements*

1. A movable demonstration type teachers desk with sink attached is needed.
2. The science laboratory should be acoustically modified.
3. The tack-board area should be enlarged.
4. A flexible, single-student-station type of furniture would add to the group experiments.
5. A suitable text for seventh-grade science should be adopted and the addition of current science magazines should be provided for the seventh grade.
6. The committee indicated there was a repetition in the science program for interested students who take the science series. Students who take science in the seventh and eighth grades and remain with the program through the ninth grade are forced to attend with students having little previous science. The committee, therefore, recommends



the inclusion of an advanced science course such as biology. This course would be optional for selected ninth-grade students with sufficient previous science instruction.

7. Fifty-three pupils, or approximately sixty per cent of all boys in the ninth grade, are enrolled in the program, considerably more than will likely become farmers.

#### B. *Plan of Action*

1. A movable demonstration type table has been ordered and a proposed general program of improvements will further improve the present science laboratory.
2. See number 1 above.
3. See number 1 above.
4. See number 1 above.
5. The school district has been requested to order appropriate science textbooks and additional supplementary aids for seventh-, eighth-, and ninth-grade science.
6. The visiting committee did not get the full perspective of the Bear River Junior High School Science Program, even though their statements are very commendable. Students who take seventh-grade science enroll for a half-year course on an elective basis. These students must register for either eight-grade or ninth-grade science in order to meet state requirements. The eighth- and ninth-grade science courses are for one year. Students who have taken the eighth-grade science course as now organized in the Bear River Junior High School do not take the ninth-grade science course. The junior high school will offer next year an advanced science class. This becomes possible because of the heavy eighth-grade enrollment in science.
7. It is true that 63 per cent of the ninth-grade boys were enrolled in the ninth-grade agricultural science during the school year of 1957-58. Even though this large percentage of students may not become farmers, it doesn't mean that the course is not useful. The junior high school is not necessarily a place for specialization; consequently, students should be given a wide latitude on selection of courses.

#### MATHEMATICS FROM THE SPRINGVILLE JUNIOR HIGH SCHOOL

##### A. *To Seek the School District's Aid in Providing the Following Improvements for the Mathematics Department:*

1. Provide for vertical articulation in the mathematics program:
  - a. By adoption of a uniform textbook series, grades three through eight.
  - b. Arrange for a grade-level workshop of mathematics teachers prior to the beginning of school in the fall.
  - c. The district should provide a syllabus or course of study giving the scope and sequence of mathematical concepts to be taught on each grade level
    - (1) to prevent the omitting of important concepts.
    - (2) to prevent excessive re-hash of concepts.
2. Provide a mathematics typewriter for mathematics teachers.

3. Provide the mathematics department with funds (other departments such as music, art, science, *etc.* all have budgets. These funds are needed in order that the department may purchase much needed instructional aids such as flannel boards and materials, large blackboard compasses and protractors, geometric solids and models, mathematical charts, and other visual aids.
  4. Encourage teachers to enroll in refresher courses, both extension and resident at the universities.
  5. Improved and extended the remedial program in mathematics.
  6. Require each teacher to teach only five periods per day, allowing one period for preparation.
  7. Kept teacher load within the limit of 150 pupils per day.
  8. Increase salaries to eliminate the necessity of part-time jobs.
- B. *To seek the school administration's aid in providing the following improvements in the mathematics department:*
1. One period unassigned to provide time for preparation.
  2. a. Mathematics magazines such as *The Arithmetic Teacher*, *Mathematics Teacher*, and *School Science and Mathematics*.  
b. Books on teaching of mathematics.  
c. Other supplementary materials for the classroom library.
  3. The mathematics teachers with a mathematics department chairman. Encourage frequent meeting of this group:
    - a. To increase correlation of department teaching.
    - b. To improve the teaching.
    - c. To define the scope and sequence of the mathematics program.
  4. A business mathematics course to be elective for ninth-grade students.
- C. *To help the mathematics teachers improve the mathematics program accomplish these things:*
1. Enroll in refresher courses, both resident and extension, at the universities.
  2. Participate in workshops on a district level:
    - a. To outline and define the scope and sequence of the mathematics program.
    - b. To outline a district-wide mathematics program complete for grades kindergarten through twelve.
  3. Participate in workshops within our school:
    - a. To outline and define the scope and sequence of the mathematics program.
    - b. To improve and extend the remedial program.
    - c. To provide a more complete and challenging program for the more advanced students in mathematics.
  4. Cooperate with the district in conducting a periodic testing program to check on the progress and analyze the needs of the students.
  5. Cooperate with the district and school administration in making a survey of the weakness in the program. Then attempt to find solutions to remedy these weaknesses.
  6. Continue to evaluate the effectiveness of the program, and strive to make needed improvements as they are pointed out.

## OFF-CAMPUS COURSES

As another means to validate the Criteria, the instrument was studied in three off-campus classes. At a meeting of the deans of the three major universities of the state, it was agreed that a comprehensive course studying the junior high school should be given in Ogden, Utah, by the Utah State University directed by Dr. Terrance Hatch of the university, assisted by Sidney L. Wyatt of the Criteria Committee as a resource person. The tentative edition of the *Criteria* was to be studied in detail. A written evaluation would be made of each section, in addition to filling in the check list of the Criteria, to evaluate the *Criteria*, which was used by the educationist committee in the evaluation of the pilot schools.

Membership in these classes was selective. It was endeavored to have the class composed of experienced and competent teachers and administrators, representing the various subjects and service areas of the *Criteria*. Recruitment for the class was made by the representatives of the Central Committee.

A similar class was conducted by Dr. Paul Hansen of the University of Utah, with Mark C. Lloyd of the Criteria Committee as resource assistant. The third course was offered by Dr. Sterling Callahan of the Brigham Young University, with John C. Mower of the Criteria Committee as resource person. This course was offered at Provo, Utah, as a third step in the evaluation of the instrument. Each of the Curriculum and Service Area Committees established by the state school office was invited to study the section of the instrument in which they were particularly interested and report in writing.

## SUMMER WORKSHOP

A workshop, beginning June 9, 1958, and running through June 27, 1958, was held on the campus of the Utah State University at Logan for the purpose of assembling and assessing the reports from the pilot school studies, the off-campus classes, and the state level subject-area committees. This workshop was under the direction of the Criteria Validation Committee, which had sponsored the previous phases of the study. This committee consisted of the assistant executive secretary as chairman and director, the executive secretary, a faculty member from each of the universities contributing to the study, the principal and chairman of the Steering Committee of each of the pilot schools, members of the Criteria Committee, the assistant state superintendent and the state director of secondary education. Those invited to attend the workshop were: the Validation Committee, the Central Committee, selected members from the off-campus classes, the Steering Committees from the pilot schools, and representatives from the State School Curriculum Committees.

### *Consultants*

Much of the success of the revision and editing of the *Criteria* which was accomplished during the workshop was the result of the services of Dr. I. I. Nelson of the University of Texas who acted as chief consultant. Dr. Nelson's experience with the development of the Texas *Criteria* was invaluable. Dr. Terrance Hatch of the Utah State University and visiting faculty members stationed on the campus for the summer gave valuable service. Dr. J. Lloyd Trump, field director of the Study, spent several days with the workshop giving us valuable help. Dr. J. G. Umstaddt and Herman A. Gruhn also were at the workshop and made their contributions.

### *Guides To Validate*

Under the direction of the Validation Committee, members of the workshop were assigned to committees to study each section of the *Criteria*. A format for final use had been prepared in one of the subject area fields by a special committee as a suggested guide. The following standards were agreed upon as means of validation:

1. Validate in light of best literature in the field.
2. Validate in terms of field observations and experiences in pilot schools.
3. Validate in terms of findings and recommendations of off-campus courses.
4. Validate in terms of interpretation and evaluation of results of the pre-project and post-project testing program.
5. Validate in terms of appraisals by the respective pilot school faculties.
6. Validate by appraisals of the Validation and Revision Committee.
7. Validate in terms of recommendations made by the state curriculum committees.

As each committee completed the area assigned, a report was made to the workshop as a whole, and the material was carefully evaluated and pre-edited. Finally an editing committee was appointed with Mrs. Pearl Budge of the University as chairman. The steps in editing were:

1. The section was edited by the workshop committee.
2. Dr. I. I. Nelson next carefully edited each section.
3. Mrs. Pearl Budge and committee edited it especially for form and structure.
4. After the instrument was finally typed, it was presented to each member of the Validation Committee and each state level subject-area committee for review.

### WEAKNESSES OF TENTATIVE EDITION

The *Criteria* Committee was gratified that the instrument in its tentative form stood up so well under the searching examination it has received. The most serious objections were that, in its original form, it was too academic and wordy for its best use. There were also

criticisms of the scoring system used. These objections we feel have been met. On the whole, the replies of respondents concerning contributory effects of the instrument were encouraging.

From the more than two hundred respondents and from professional personnel who evaluated the tentative edition of the *Criteria* by the instrument prepared, the following are some of the most frequently recurring evaluations:

#### *Criticisms*

1. The instrument is too wordy in some areas.
2. The scoring system does not reflect a true picture of the quality of the department being evaluated, especially in the total score.
3. The instrument is effective in evaluating the broad school program, but should be more of an evaluation of teaching and at the same time preserve the security of the individuals involved.
4. It would need to be used by people who have spent much time studying it.
5. Outcomes are too difficult to evaluate.

#### *Commendations*

1. It will certainly up-grade the junior high school.
2. It gives a principal insights into his own school.
3. It boosted teacher morale.
4. It causes us to analyze ourselves.
5. Points up needs of which we were never conscious.
6. An excellent in-service training device.
7. The finest focus on the junior high school I've seen.
8. It gives dignity to the junior high-school program.
9. It will assist betterment for the pupil as a whole.
10. It will help bring about needed facilities.
11. The greatest aid to help teachers I've seen.
12. There is clarity and ease of recording observations.
13. It is comparatively easy to use.
14. It considers important details schools often miss.
15. It does not permit a dilution of junior high-school values.
16. It makes evaluation systematic and habitual.
17. The instrument has an outstanding philosophy.
18. Its evaluation of outcomes is highly important.
19. It does pressure the worth and dignity of teachers.
20. One of its great functions is the inclusion of students.
21. It certainly develops public relations.
22. It recognizes the importance of teacher class loads.

#### IMPACT OF THE STUDY

We in Utah feel that already, because of the study, there is emerging a better understanding of the purposes of the junior high school. A more effective program will emerge in providing school plants which will meet the unique needs of junior high-school students. Teachers will be better trained for service in this area, and equipment and a program of studies will be better suited to students of this age.

From the pilot schools, reports continue to come in of further improvements being made as a result of the suggested improvements made by the visiting committee. Important in these plans are the better utilization of teacher time and competencies, scheduling, changes in class size—sometimes increasing them for better use of competencies—adding or deletion of subjects offered.

It was interesting to note that the great majority of suggested improvements in the schools could be made with no or little increase in cost.

### *Aroused Interest*

We feel that there is beginning to be a greater interest in and an awareness of the junior high school. Teachers are feeling a pride in their teaching level and less desirous of going to the high school. Teacher training institutions seem to be more aware of the special training needed to teach on this level. Local and state boards of education are being made aware of needs of these schools.

### *Publication*

A committee of three, consisting of the assistant executive secretary in charge of the project, the state supervisor of secondary education, and a member of the *Criteria* Committee, was charged with the publication of the instrument. Arrangements were made with the State Superintendent of Public Instruction to have it copyrighted and published. This work is now in progress. We plan to publish the *Criteria* complete in one volume and then to publish each of its sections separately in order that an entire school or only one department may be evaluated.

The instrument will be offered to the schools of the state of Utah, and others who may wish to use it, with the hope that it will serve the teachers and administrators of the junior high schools to understand better their responsibilities and to give them a means of upgrading the program with which they work.

In presenting this *Criteria* to the profession, the committee which has been responsible for its development does so with a feeling of humility. We are deeply aware of the fact that it is far from being perfect and that future revisions will be necessary to keep it up to date.

Our heartfelt thanks go to the NASSP Commission and the Fund for the Advancement of Education, and to Dr. J. Lloyd Trump who have made possible the completion of this project. We are also deeply appreciative of the help given us by Dr. I. I. Nelson of the University of Texas who was our consultant in the revision and editing phase of the study. The entire profession on the secondary-school level within the state has loyally worked as a team—the universities, the state school office, and the school districts.

***Part V***

**Studies Being Started  
in 1958-59**





Faculty groups worked out plans for conserving valuable professional time during the 1957-58 school year. The Lakeview High School's (Decatur, Illinois) Accelerated Program was the faculty's answer for improving the quality of education for above-average and gifted students.

## **San Diego Uses the Teaching Team Approach in Staff Utilization**

L. L. BLOOMENSHINE

**F**OUR secondary schools in San Diego, California, are experimenting with more effective utilization of teachers. Of these four schools, two are junior high school and two are senior high school. These schools are adjacent to and located in the same area as San Diego State College, the major teacher training institution in our community.

### **PURPOSES OF THE STUDY**

As its purpose, this experiment is aimed at developing techniques for a team approach to teaching. These teams include: (1) members having less training than that required of professionally trained teachers, (2) teachers with limited teaching experience, and (3) experienced and highly competent teachers who also have ability as organizers and directors of a staff program.

This team organization seeks to achieve three major objectives. The first, and most important, is to make more effective use of skilled teachers. However, objectives two and three are also important. These are: to provide for effective instruction through the use of non-certificated services in lieu of the services of regularly credentialed teachers and to assist in the recruiting of competent people to be the teachers of the future.

Through the use of these teams, we are developing objective answers to these questions: (1) Can the per-student coverage of existing certificated personnel be extended effectively by the use of non-certificated assistants? That is, can three certificated teachers handle the equivalent of four teaching assignments when assisted by two non-certificated persons? (2) Can some aspects of instruction be taught just as effectively in larger groups under trained leadership? (3) Can an additional avenue of recruitment be developed by establishing non-certificated teaching assistant positions?

The schools involved in this experimentation are relatively large. Each junior high-school ranges somewhat above 2,000 in school popula-

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tion. The senior high schools have a slightly lower enrollment—each ranging from 1,500 to 1,700. All of the principals of these schools are interested in this experiment and are taking responsibility and providing leadership in development of the program.

#### PROCEDURES BEING FOLLOWED

Each of the schools has set up at least two teaching teams. These teams are in the following subject areas: science; United States History; physical education; English-social studies; drama; and typing.

How are these teams operating? For the most part they are composed of four people: a team leader, a less experienced teacher, and two teacher assistants. Their respective duties are, in general, as follows:

The team leader is the experienced teacher who instructs students in large groups. Such large groups range in number of students from 80 to 125. This instruction involves teaching of techniques, skills, and laboratory demonstrations. Also, the team leader assists the less experienced teacher plan his teaching program.

The less experienced teacher works with smaller groups of students and, in this way, makes possible individual participation for each student. The less experienced teacher also assists in presentations made to the larger groups.

The teacher assistants are the non-credentialed members of the teams who assist in many ways. They see that materials are available, work with committees and individual students, and perform clerical duties such as grading papers, keeping records, duplicating tests, and working with assignment sheets and other materials.

The manner in which a team operates differs according to subject area field. A physical education team has problems that differ from teams in science, English, or typing. Let us look at some of these teams and how they are operating.

In boys' physical education, each period the class ranges from 125 to 160 boys. A teaching team for a group of 160 students consists of a team leader, two credentialed teachers of limited experience, and two non-credentialed members who have special interest and competence in the area of physical education. The class is divided into four groups of approximately 40 boys each. For the introduction of new skills, new games, or new knowledge related to the physical education program, instruction is given by the team leader to the students in three of the sub-groups. In this part of the program, assistance is provided by one of the less experienced credentialed teachers and by the two non-credentialed assistants.

Skills and techniques introduced are practiced in the gymnasium and on the playing field. During this practice period the boys are supervised by one of the less experienced teachers or one of the non-certificated assistants. Over-all supervision for this practice period is the responsibility of the team leader.

While the three groups are learning and practicing new skills and techniques, the fourth group is being given instruction in specialized skills such as those involved in tumbling, wrestling, and so forth. This instruction is carried on by a regularly credentialed teacher other than the team leader.

Throughout the year it is planned that the groups will be rotated through the various types of activities so that each boy will receive instruction as a member of the large combined group and instruction in specialized activities in the smaller group.

Science classes provide an example of how the team approach may be used in an academic situation. For these classes, as many as 80 students have been scheduled. The group has a team leader, a less experienced teacher, and two non-credentialed assistants.

When new and difficult material is being presented, the full group is taught by the experienced teacher. Such a presentation often involves lectures, demonstrations, and use of audio-visual materials.

The usual work program, however, requires that the group be split into two parts. Each of these is taught by the credentialed teacher who has a teaching assistant to help with class discussions, laboratory work, and supervised study. In addition, the assistants relieve the teacher of much of the time-consuming labor involved in grading and record-keeping.

#### EVALUATION

As this, our first year, goes by, we are learning much about the ways in which inexperienced teachers and teaching assistants can be used. Although we felt, at first, that the teaching team approach was applicable only to a few areas, we are now beginning to realize that it has no arbitrary limitations.

As we go into a period of evaluation later this year, we expect to involve San Diego State College, our own research department, the teachers and assistants involved, the students, and their parents. It is too early to include the details of evaluation procedures in this article. We hope to have the opportunity to tell the story of evaluation at a later date.

## Potential Services of FM Radio in Staff Utilization in South Bend: An Experiment in Group Guidance

KENNETH W. REBER

THE School City of South Bend, Indiana, is carrying on an experiment in group guidance this year at the high-school level, utilizing the facilities of its FM radio station. Radio broadcasts are used to teach certain types of occupational, educational, social, and personal information to selected groups of ninth- and eleventh-grade students.

### HOME-ROOM PERIODS LENGTHENED

Thirty-minute broadcasts are presented to large groups of students every two weeks in lengthened home-room periods. The students have been scheduled into home-room groups of 80 to 120 or more, depending upon the facilities. A core of teachers supervise each room. The grade-level counselor coordinates the home-room activities under the direction of the building principal. A clerk has been assigned to each participating grade-level counselor to help with routine duties and to carry out responsibilities related to the experimental project. Three of the four public high schools receive the ninth-grade broadcasts and one the eleventh-grade broadcasts. There are 1,060 ninth-grade students and 360 eleventh-grade students involved in the program.

### COUNSELORS GIVEN MORE TIME

But how does this result in better utilization of staff time? We are not sure, of course, that it does. The major objective is to free the counselor for individual counseling without decreasing the effectiveness of the instruction in group guidance. Freed of the responsibility for teaching classes in group guidance, the counselor has more time for individual counseling and for working with the classroom teachers. It may be, too, that the experiment will show that fewer teachers can handle more students during the home-room period in the enlarged groups. If so, some of these teachers will be relieved of this responsibility. So far, the press of routine home-room activities makes this unlikely.

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Kenneth W. Reber is the Director of the Division of Special Projects in South Bend, Indiana, City Schools.

### SPECIAL STAFF PREPARES BROADCASTS

The experimental project is under the direction of the division of special projects. The staff consists of two professionally trained persons and one secretary, plus the clerks that are assigned to the counselors. The division performs in a line relationship with the department of instruction and in a staff relationship with the department of guidance and other agencies. The staff directs the project, coordinates the program with other school activities, prepares the broadcasts, and carries out the evaluation. The audio-visual education department handles all technical phases of the broadcasts and acts as a consultant in productions.

### STUDENT PROBLEMS ARE IDENTIFIED

Two major devices have been used to identify student problems and needs. The *Science Research Associates Youth Inventory* was given to each student early in September. The results helped give direction to those preparing the broadcasts. Also, a question and suggestion box was placed in each home room. The questions are answered during the broadcasts. A mimeographed newsletter, published bi-weekly, keeps the students informed regarding future broadcasts and their responsibilities. Students often carry out activities during the broadcasts. The broadcast material is closely correlated with work being done by the counselors and classroom teachers.

### EVALUATIVE TECHNIQUES HAVE BEEN DEVELOPED

The *Youth Inventory*, mentioned above, will be given again in May or June. The first inventory identified student problems and needs; the second should give some indication of how well these needs have been met. A brief, objective type test is given before each broadcast to ascertain how much the student knows about the material that will be presented or to measure attitudes. A similar test is given after the broadcast to see what change has occurred. A comprehensive test will be given at the end of each semester. Later in the year, a random sampling of student opinion regarding the broadcasts will be carried out. Each broadcast is evaluated by the participating home-room teachers. They evaluate such things as student interest and behavior, value and timeliness of the material, the technique of presentation, and sound transmission and reception. Each broadcast is evaluated informally by an advisory committee made up of representatives from the various participating schools.

### A FEW OBSERVATIONS

Although at this writing the project is in its formative stages, we have been able to make a few generalizations regarding instructional programs via radio broadcasts: (1) thirty minutes is a long time; (2) there must be provision for some type of student activity during part of the broadcast—something must be required of him; (3) the acoustics in



Guidance tapes about to be broadcast on South Bend school FM radio.

most rooms are not adequate to receive radio broadcasts clearly—improved amplifying equipment helps some; (4) the material must be presented in an interesting and challenging manner; (5) staff personnel will give real support and cooperation when they have a part in the planning and are convinced that the project is designed to enrich the educational program for the students; (6) some parents are concerned when they hear that their child is part of an “experiment.” It is essential that parents understand the true nature of the program and realize that the odds are that their child will benefit from it.

#### THE COST FACTOR

The major cost in this experiment consists of the salaries of the two professional employees who prepare the broadcasts, the salaries of the four clerical workers, the maintenance of an office and production center, and office supplies. Some costs should not be related to the project, such as the construction of additional counseling offices, acoustical treatment, improved amplifying equipment, and the operation of the radio station. These were necessary but were desirable regardless of the experimental program. The grant from the NASSP Commission and the Ford Foundation this year will help pay for expendable items necessary for the experiment; all other costs are borne by the school system. Some costs will decrease as materials are accumulated and initial outlays decrease. The additional time which the counselors have for individual counseling is a plus factor.



## **Illinois Principals' Association Initiates State-wide Staff Utilization Studies**

### **A. Planning for the State-wide Utilization Studies**

JAMES H. CHERRY

THE first official consideration of the idea of undertaking a state-wide cooperative study of staff utilization in secondary schools in Illinois by the Illinois Association of Secondary-School Principals occurred at a meeting of the Curriculum Committee on October 1, 1956. This committee passed a resolution on that date authorizing its chairman to appoint a small committee of the members to consider possibilities of such a project further, and, with the advice of the entire committee, to make specific proposals and to take definite steps as they were found to be suitable. This action was endorsed by the Executive Committee of the Association on the same day.

#### **FIRST STEPS**

During the winter of 1956-57, soon after its appointment, the sub-committee made a state-wide survey of secondary schools by mail in an effort to discover interest and readiness. While responses were sufficient to attest to both concern and readiness, the committee was unable to describe to its own satisfaction sufficiently clear patterns of interest to move directly from that point to the task of fashioning specific proposals. After careful study of various alternatives, members present agreed that a conference was needed with agents of interested schools.

At this juncture the sub-committee turned to representatives of the University of Illinois, the State Department of Public Instruction, and the Illinois Curriculum Program for guidance and resources. Through these sources, conference staff and facilities were found. On November 25, 26, and 27, 1957, eighty representatives of forty schools met at Allerton House, Monticello, Illinois, at their own expense, to consider possibilities of joining together in a study of staff utilization. Twenty-four of these schools submitted tentative outlines of studies that they felt had promise in bringing solutions to aspects of staff utilization with which they were concerned locally.

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James H. Cherry is General Assistant Superintendent, Joliet, Illinois, Township High School and Junior College, and is Chairman of the Curriculum Committee of the Illinois Association of Secondary-School Principals.

## SCHOOLS PREPARE PROPOSALS

In the weeks immediately following, the interested schools prepared more elaborate project plans. These plans involved specifying objectives, procedures, additional staff or released time for staff, consultant needs, time limitations, and costs. These detailed plans were the subject of careful scrutiny by the sub-committee. In order to clear other questions that resulted from this examination, conferences were arranged with representatives from the various schools. In most cases these delegations consisted of a member of the administrative staff as well as some of the teachers who would be most directly involved. For the greater convenience of the different delegations, members of the sub-committee set up two conference locations—one at the University of Illinois, Urbana, Illinois, on April 26-28, 1958, and the other at Arlington Heights Township High School, Arlington Heights, Illinois, on April 30, 1958. Different members of the Curriculum Committee assisted with these conferences on different days.

The sub-committee now found itself in a position to complete plans rapidly. Projects which were obviously duplications of other studies known to be underway elsewhere in the state or nation were dropped after further consultation with the schools. Fourteen projects were finally approved as a basis for action. A formal recommendation was approved by the committee and presented to the President of the Illinois Association of Secondary-School Principals. This officer, in due course, forwarded it to the director of the Commission on the Experimental Study of the Utilization of the Staff in the Secondary School of the National Association of Secondary-School Principals, together with a request for a grant of funds.

On June 4 and 5, 1958, a training session was held with key teachers and administrators of the participating schools. Enthusiasm at this session seemed a gratifying reward to long months of effort and preparation. The interest and eagerness with which participants looked forward to getting underway officially was evidence that each component part of the state-wide project was founded in problems and programs closely related to local concern.

## COOPERATIVE EFFORT

During the entire period of the development of plans for the Illinois Staff Utilization Studies, the director of the National Association of Secondary-School Principals' Commission, and the director of the Illinois Curriculum Program and his staff members have been valuable sources of leadership, help, and advice. Plans for the project incorporate coordination and supervision by means of a research associate working with the director of the Illinois Curriculum Program.

The Illinois Curriculum Program was launched in 1947 as a branch of the office of the Superintendent of Public Instruction to work out ways for coordinating the numerous efforts of school people and citizens

to improve the schools. Voluntary groups like the professional education organizations (more than 54 in the state of Illinois), the Illinois Congress of Parents and Teachers, business organizations, labor organizations, school study councils, and many, many others were conferring about the problems of education and making their influence felt here and there. To realize the wealth of this resource, the Illinois Curriculum Program was extended as a reagent to precipitate the study, experimentation, and influences of voluntary groups and organizations in local communities. To enable the Illinois Curriculum Program (which is more a vehicle for other organizations than a well-defined organization in its own right) to have sufficient leeway and flexibility to match the constantly emerging voluntary interests of school people and laymen, it was given a considerable degree of autonomy in decision and policy making. It operates under policies and direction determined by a large steering committee made up of representatives of the lay and professional voluntary associations in Illinois. Plans for the studies in a number of the Illinois schools are described in some detail in subsequent sections of this chapter.

**B. Group Guidance, Administrative Patterns,  
Driver Training, and Tape Recordings Are  
Studied in the Taylorville Senior High School**

JACKSON M. DRAKE

THE teaching staff of the Taylorville Senior High School is vitally concerned about improving the quality of education given to the boys and girls of our community. We do not mean to imply that we are dissatisfied with the job we have done in the past, but we do recognize that, by the exercise of imagination and ingenuity, we may cause the quality of education to rise. How can this be accomplished? No one has THE answer. We offer no magic formula or panacea for the solving of better staff utilization as we are faced with the rise in enrollments. However, we do feel that, as a staff of professional teachers, we can do many things (experimental in nature) that may deviate from the typical *status-quo* type of educational instruction. We know that teacher utilization is based primarily on tradition, opinion, and common practice. We do not mean to imply that the methods or techniques we have been employing are necessarily wrong, but we would like to lend our efforts toward further studies to see if what we are doing is the *best* we can do. Every member of our teaching staff will be striving to encourage more individual study on the part of students.

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Jackson M. Drake is Principal of the Taylorville, Illinois, Senior High School.

### MAKING THE MOST EFFECTIVE USE OF STAFF IN GROUP GUIDANCE

We feel that one of the biggest challenges confronting us is the attempt to change student attitude with respect to more individual responsibility and study on the part of each student. A change in the cultural attitude of our community toward independent study will also be necessary.

It is our hope that, through more effective guidance, we can help students realize their own potentialities and special talents. Self-identification and realization on the part of the academically talented student will be one of our major goals through our individual and group guidance program. When every student is a committed student with special aims and objectives set up for himself, he is then in the ideal frame of mind to develop more individual responsibility for learning. Learning for him will take on a brand new approach because it will be self-motivated, meaningful, and purposeful. When this takes place, we can better provide for individual differences and needs about which we so often talk and write. Staff members will have the time as well as the opportunity to give individual help to students that require it.

We begin this study of better and more effective staff utilization with a certain amount of bewilderment. This is always true when there is a departure, no matter how slight, from tradition, opinion, and the common practices that influence us. We sincerely hope that we can explore and develop new approaches to better teaching and improve the quality of education in our school system. We will use several of the techniques suggested by Dr. J. Lloyd Trump, Director of the Commission on the Experimental Study of the Utilization of the Staff in the Secondary School.

In the reorganization of our home-room guidance program, we are attempting to keep in mind the importance of the close human relationships between the teacher and the students. The teacher assigned to a home room remains with the same group of students throughout the three years of high school of the student and thereby learns to know the student as an individual. The teachers become thoroughly familiar with the permanent records of their students. In every way possible, they attempt to become acquainted with the potentialities of the students and to guide them along those lines in which they will meet success.

In dealing with the home room, the teacher has many problems with which to work. We are going to attempt to give help in some of the group guidance through the use of the better qualified students. On certain days, a representative from each home room will meet with a counselor and receive information which is to be used in the home room. It then is up to this student to organize a plan as to how the material is to be presented to the home room—discussion, panels, role play, *etc.*

We have worked out an outline of guidance materials to be used in the tenth, eleventh, and twelfth grades. In so doing, we have attempted to have a continuity in the program. Materials are made available to the home-room teachers and to the students through the counselor. In conducting these home rooms, we want the teachers to conduct them informally if possible. Of course, every home-room teacher may use his or her own ingenuity in conducting the class. The problem to be discussed may be one pertinent to his group at that particular time. Then is the time to discuss it.

Through our home rooms we hope to develop a positive attitude toward self-directed study. This will require a change in attitude of the student, faculty, and parents.

#### REORGANIZING ADMINISTRATIVE PATTERNS

If we exercise imagination and engineering ingenuity, we quickly realize that there are many ways which seem to offer hope in our struggle to improve the quality of education in this "space age" in which we now live.

One of our major goals is the development of more independent study on the part of students. Before this can become a reality, we must put the pupils and parents in a frame of mind to accept and to accomplish the independent pursuit of academic knowledge for its own sake. When this is accomplished, we can move toward the elimination of some of our staff-supervised study halls. At present, we have one Honor Study Hall (no staff supervision) and we hope to have one or two more during the school year.

In planning pupil programs, we have endeavored to group students in relation to different levels of maturity, interests, and achievement. We have done this in our English classes and, as a result, the class size is different. For example, our slow tract of sophomore and junior English classes have twenty or fewer students in them, while the more able English classes will have thirty-five or forty students.

Whenever possible, we have endeavored to schedule students in larger groups. We hope to work some senior English classes and American Problems classes into double periods on various days of the week. We plan to use the teacher-team approach and take advantage of a newly installed sliding door that divides our large civic room into two separate classrooms or opens up into a large classroom capable of accommodating seventy-five or eighty students at one time. Instead of the regular twenty-five class meetings per week for the teacher, we hope to cut some of the weekly class meetings down to twenty-two or twenty-three meetings, thus relieving the teacher for more planning and evaluation. We hope to demonstrate that certain phases of English and social studies can be better taught and more successfully mastered in a program that deviates from the traditional approach.

Projects that integrate the work of the teacher, subject matter, and material aids will be developed. A rather extensive use of sound tapes and tape recorders will be made when new material is being introduced. Drill exercises will also be taped as well as other aids to learning.

The school day at the Taylorville Senior High School begins at 8:45 A.M. and ends at 3:34 P.M. We are a community unit school district and operate fourteen school buses daily, transporting students to and from school. This fall, we scheduled a distributive education class to begin at 8:15 A.M. Driver training instruction now begins at 8:00 A.M. for some students and the instructor has scheduled some of the behind-the-wheel training for Saturday mornings.

With our second semester, we will begin a course in personal typing for ninth-grade pupils. This is the first time this course will be offered students in this class group. We have a junior high school (grades 7, 8, and 9) and a senior high school (grades 10, 11, and 12). Personal typing up to this time has been offered only to senior high-school students. Enrollment in the class will be purely voluntary and will begin at 8:00 A.M. each morning. Students in this class will take personal typing in addition to their regular daily schedule in junior high school. The class will meet for forty minutes each morning (this is less than the Carnegie unit) and will be aimed at offering credit on achievement of purposes rather than on time spent.

Our facilities for chemistry and physics students are limited because of experiment stations in the laboratories. It is impossible to schedule larger science classes and individual student experimentation is cut short because of the time factor. We have made every attempt to keep the laboratory facilities open daily during the activity period, as well as before and after school. We are encouraging the more competent and interested students to work in the laboratories on Saturday mornings. We will study the effects of these extra science periods in the total quality of instruction in science.

Our teaching staff is quite enthused about some of our changes in procedures. It is still too early to tell just what effect the changes will make, but we are anxious to experiment. We are deeply aware that changes force decisions and decisions must be made with an effort to improve the quality of education.

May we constantly be reminded that our efforts and experimentations are designed to solve problems, not merely attempts to prove or disprove the worth of existing practices.

#### CHANGING THE SCHEDULING IN DRIVER TRAINING

Each class in driver training will be composed of twelve (12) students. This is larger than the state recommended number, which is eight or nine. However, for experimental purposes we have scheduled twelve students in each of the three classes. Thus, thirty-six students will be enrolled in driver training each semester.

During the first two weeks of school, students enrolled in the driver training course will meet one full period each day. This will constitute ten hours of the required thirty hours of classroom work. Four hours of observation time in the car (not behind the wheel) will be counted toward fulfillment of the thirty classroom hours necessary.

These students will then be scheduled for thirty-two meetings during our regular daily activity period (10:41 A.M. - 11:16 A.M.). All three classes, totaling thirty-six students will meet together for the lecture phase of the course at this time. This will eliminate the necessity of the instructor repeating the same daily lecture to each of the three classes. This will certainly result in better staff utilization of our driver training instructor.

The actual behind-the-wheel instruction will begin the third week of each semester. The state requires six hours of actual behind-the-wheel driving time for each student. Each class will be divided into three driving groups of four students in each group. Each student will receive the minimum of six hours of driving time behind the wheel.

Our school day begins at 8:45 A.M. each day and closes at 3:34 P.M. each afternoon. We will schedule some of our students for behind-the-wheel training as early as 8:00 A.M. and also after school and on Saturdays. This schedule arrangement will give the instructor time for conferences with individual students and make it possible for extra instruction in the behind-the-wheel phase of the program. The instructor will have quite a bit of flexibility in working with the students. This type of scheduling is a break-away from the standard procedure, but we feel that it will result in more flexibility in schedule arrangements to accommodate different sized classes at appropriate times.

#### USING THE TAPE RECORDER

One phase of our better staff utilization plan will be a rather wide use of tape recorders. The Minnesota Department of Education in St. Paul has collected an extensive library of educational recordings. Its catalog, *Tapes for Teaching*, lists many selections that we may choose to have recorded on tapes which we send to them.

The department of audio-visual instruction publishes a national directory of schools and universities that provide educational tape recording services.

We fully realize that the use of tapes as teaching aids is merely an educational tool. However, we do recognize its potentialities as a labor and timesaving device. In addition to providing many educational benefits, it can serve as an assistant in the classroom, relieving the teacher of necessary routine work.

#### BUSINESS EDUCATION DEPARTMENT

The use of tapes would not only save teacher time and voice, but also provide for clear-cut diction and directions at various speeds. We plan



to make tapes with material ranging from slow to fast and from simple to complex exercises for beginning and advanced typing and shorthand classes. Thus the tape recorder can take over some of the study drill, freeing the teacher to help individual students.

#### AMERICAN PROBLEMS

We have five classes of American Problems that meet daily, five days a week. This is a required course for all of our 150 seniors. We are planning to use tape recordings in several of the teaching units in this course during the school year. For example, we would like to have these classes visit city and state departments when they are studying local state government. We endeavor to involve as many students as possible and to iron out conflicts in the daily school schedule. We plan to select class representatives from each of the five classes and let them visit city and state officials. (We are only 27 miles from Springfield, the state capital of Illinois.) The students selected will record interviews and take 35 mm color slides and other pictures of trip highlights. The class representatives will then arrange the slides in proper order and tape-recorded narration to accompany each set of slides. With these, they will report to their respective classes. Another important phase of this course is the preparation and study of materials concerning the U. S. Constitution and the constitution of the state of Illinois. The same test is given to each of the five classes; consequently, the same type of instruction and lecture is given to each of the five classes. Rather than to give the same lecture five times each day, we plan to combine some of these classes whenever possible and let the instructor introduce new material to 75 or 80 students at the same time. On some days, this will cut the American Problem sections down from five to three or possibly two, thus relieving the instructor on those particular days for independent study, research, and evaluation of the program. We anticipate and hope that part of this time will be spent in student-teacher conference.

#### AMERICAN HISTORY

American History students in our school have been discussing ways to improve our research reporting projects on various units covered during the school year. We borrowed an idea from one of the C.B.S. "You Are There" series and sparked the idea of producing our own dramatization of historical events for tape recordings right in the classroom. We decided to call our program, "On the Scene." The following plan for carrying out the project has been formulated.

1. Group leaders are elected by their class and each leader chooses several students for his or her group. Then each group selects a topic such as "The Signing of the Magna Charta" for its work.
2. Each group will be held responsible for collecting information for its selected topic. We expect pupils to learn how to use library reference ma-

terials, card catalog, the *Readers Guide*, and the table of contents to locate information needed.

3. The next step is the preparing of their script. This is a real problem to students because they must think through their problems and discriminate between the trivial and the important. It is necessary to plan for continuity, certain sound effects, and, if necessary, musical background.

4. The final step of recording the program and each group performing, with the remainder of the class looking, will be the climax.

Some effects of such a project are not of the type that we will be able to see immediately. However, we do feel that the following things should occur.

1. Such projects will arouse the interest of the group.
2. It will develop independent study, initiative, and self-reliance on the part of pupils.
3. It should stimulate a wider use and knowledge of resource-finding techniques and library materials.
4. It should improve radio and television listening habits.
5. It should teach cooperation and bring American History into their own classroom for the benefit of all.

#### FOREIGN LANGUAGES

In teaching *Spanish* and *French*, we use records almost daily, films frequently, and the tape recorder occasionally. We also have foreign magazines similar to some of our popular magazines.

Our language texts have recordings to accompany them. They have been recorded with "spaced repetition," which allows time for the students to repeat each phrase after hearing the voice of the native speaker. Generally, we do not use the recordings for teaching new material. We find them more useful to review material which has already been taught, since records cannot provide the personal touch so necessary in teaching a foreign language. However, hearing new voices adds to the interest, and the "spaced repetition" permits the students to repeat what they have heard. Recordings are also useful to a student in making up work that he has missed due to an absence from school. He may do this before or after school, or during a free period.

We have used the tape recorder to allow students to listen to their own voices. Then they may compare their pronunciation with the pronunciation of the native speaker on the record. This particular procedure is more successful with small classes since, in a class of thirty or more, the students become tired and restless before everyone has had an opportunity to participate, and, too, the amount of time required is too great to warrant this procedure in large language classes.

The tape recorder is very good as an additional means for providing meaningful repetition. Also, we have used it for recording plays and dramatizations. One of the students recorded the dialogue for some filmstrips he showed to one of the language classes. By making the recording, he was able to give a more finished presentation than he would

otherwise have been able to do inasmuch as he could make corrections on the tape.

The teacher can also record dictation to be given to the students while she observes the work being done and the difficulties which some of the students may have. Also, the teacher may record questions on tape, allowing time for the students to write the answers or to give them orally.

We use sound films with the commentary by native speakers. Previous to seeing and hearing the film, students are provided with mimeographed copies of the dialogue which is read and studied prior to viewing the film. For some of the films which have English commentary, the teacher turns off the sound and gives the commentary in the foreign language.

Unfortunately, our school does not have a language laboratory. However, a separate small room or a booth with phonograph and records for the use of students during their study periods would be a great help if students could sign up for fifteen-minute periods to use the records and phonograph.

Foreign magazines, similar to some of our popular magazines, are also provided. Students have enjoyed reading the advertisements and the captions of the various pictures.

We have a number of foreign-made recordings of songs and music for use in the language clubs. The students are provided with mimeographed copies of the words of the songs which aids greatly in learning to sing with the recording artists.

#### LATIN

For teaching Latin at the high-school level, there are available some commercially prepared tapes and records that have value in helping the student to learn Latin, particularly to listen effectively. Many of these recordings are of more use in stimulating interest than in helping true learning—a matter that should not be discounted, however, because getting and maintaining interest is important. The University of Minnesota has available a large selection of recordings that have been prepared by the Classics Department. These will be recorded for any school if the school furnishes tapes. The University of Illinois also has some recordings for sale. "Tutor That Never Tires" has an extensive list of instructional records on vocabularies, forms, grammar, and syntax. Many of these recordings and records, if available to the Latin teacher, could be used in the classroom to help in reviews, drills, and presentation of new areas of grammar as well as to stimulate interest.

There is another area that could be developed to advantage by the Latin teacher; that is teacher prepared recordings in the teacher's own classroom. In this method, the instructional materials could be selected and arranged to fit the individual teacher's plan of study for his classes. Much of the time spent in repeating drills and forms to separate sections

could thus be reduced. While students are listening and responding to the teacher's voice on tape, the teacher would be free to move about the room to supervise and aid each student more effectively. Students needing more study time could use the tape recordings for drill and review while the teacher worked with the more able students on advanced or additional study. This method might help answer part of the problem of dealing with the different levels of ability in the Latin classes. And, since almost every Latin teacher sponsors a Latin Club, this is another opportunity to use the tape recorder to advantage in preparing more worth-while club programs and activities.

**C. A Search for Practical Means of Improving Instruction  
by Increasing Students' Responsibility for Their Own  
Learning at the University of Illinois High School**

DAVID M. JACKSON

**I**F A teacher organizes and conducts a section of 25 to 30 students in a given course to provide for a great deal of individual study and independent work by the students, he is likely to find that his own time is insufficient for him to give each student the necessary individual help in planning and carrying out a project. As the teacher attempts to work with individuals or small groups, other class members may encounter problems and lose interest while waiting for the teacher's help. Or, students may, as they work independently, venture into so many areas of subject matter that the teacher cannot possibly be expert or even very well informed in all of them. Much student time may be wasted because needed information, both as to techniques of study and the content itself, is not readily available. Disciplinary difficulties may also arise as some students react to greater freedom by testing the limits of permissible behavior.

These are just a few examples of the many practical difficulties which must be dealt with if students are to develop independence in study. The five studies in the use of teachers' competencies being launched in the University of Illinois High School during 1958-59 are directed primarily toward finding practical means of increasing the responsibility placed on students for their own learning.

Three of the studies supported by the Commission on Staff Utilization are in the teaching of science, one is concerned with advanced work in French, and one study involves administrative reorganization to ease the transition from secondary school to college. The projects in science

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include: (1) a study at the ninth- and tenth-grade levels in biology for a group of pupils with varying interests and abilities; (2) a study at the eleventh- or twelfth-grade level in chemistry with pupils with more specific interests and the ability to do college preparatory work in chemistry; and (3) a study of independent honors work for twelfth-grade students who have the background necessary to study a scientific problem on their own and who are capable of defining a specific problem and devising appropriate means for studying it.

### BIOLOGY

As students arrive for their first biology classes in the fall, they are surrounded by samples of fleshy fungi, galls, bacteria, fresh-water protozoa, algae, fishes, insects, crustaceans, plants, and mammals. As they ask questions about these objects, they are encouraged to begin to study them. As they try to study the fields represented, they are given materials which explain techniques to be used, how to plan and structure the study, apparatus to employ, and sources of explanatory and descriptive published material. The students are carefully observed by the teacher and his assistant to determine what difficulties are encountered in order that appropriate materials may be designed to help students deal with the most common difficulties themselves.

The biology project is testing the hypothesis that materials can be prepared for students in a laboratory course in biology which will aid them in working on their own, freeing the teacher to help on those problems which demand specialized knowledge and competence. We hope that a number of common difficulties in laboratory work can be identified, and also that another category of problems, such as the use of radioactive isotopes, tissue culture, and the rearing of parasites, which demand highly specialized assistance, can be referred to competent authorities for answers which are usable in classroom and laboratory.

### CHEMISTRY

Experimentation with the chemistry course was planned and is being carried on with the cooperation of the University Department of Chemistry. In the first phase of the experimental course, all members of the class are taught a core of fundamental concepts such as atomic structure, bonding, valence, and measurement. The study of fundamentals is designed to lead the student into an interest in further investigation which can be carried on within the course or outside it and to provide a base of knowledge with which the student can work effectively in solving problems. From the first phase, *directed class study*, students will move to the *group study* phase in which small groups work on problems of solubility, the activity series, rates of solution, saturation, and super-saturation. At any time during the second phase when an individual (or group) indicates a willingness to proceed independently, the third phase, *individual investigation*, beings. At the

outset of the third phase, the student analyzes unknowns from a series of graded difficulty. Next, the student selects a specific area in which he identifies a particular problem and attempts to solve it.

The procedure in the final phase varies with the individual student. But, in general, it involves presentation of preliminary plans including identification of the problem area, clarification of the area to be investigated, collection of some preliminary data or information concerning the problem, and the statement of hypotheses. Given approval of these preliminary plans, the student either devises an experiment to test the hypotheses, or he investigates the subject further in references, or he makes contact with the individuals who might be able to help in the study, or he does whatever else might be pertinent to the solution of the problem. Eventually, he hands in a written report in which he answers the question or solves the problem to his own satisfaction or he proposes a new problem which may have arisen as a result of investigations on the first one.

Evaluation techniques will be consistent with each phase of the course, with objective tests, teacher's judgments, small-group judgments, class judgments of small group achievement, and individual self-evaluative judgments. At the end of the course, a standardized factual information test and a specially devised test to measure aspects of scientific method and self-directive abilities will be used.

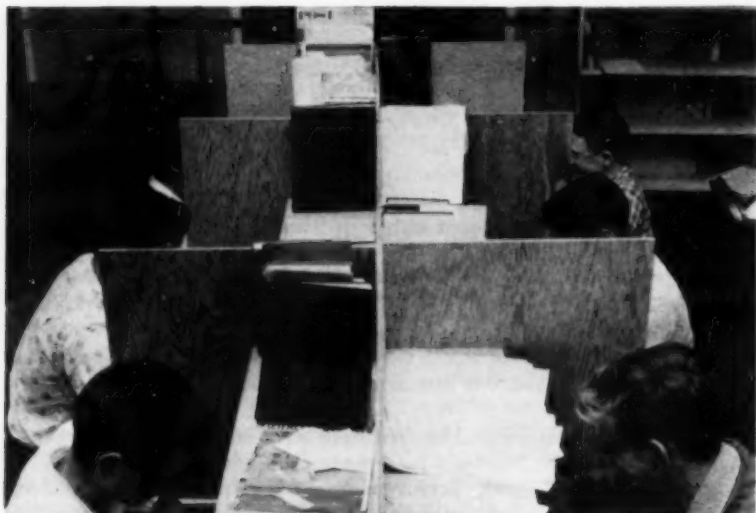
In both the biology and chemistry projects, para-professional teachers' assistants are being used. In the biology project, however, the assistant helps the teacher with the research aspects of the project rather than with the teaching itself, because the biology project is aimed at developing methods and materials to enable a single teacher to work successfully in the laboratory with classes of 25 to 35 pupils. We strongly believe that laboratory work which is genuinely experimental is of basic importance even during a period of rising enrollments and larger class sizes.<sup>1</sup> Experimental inquiry rather than a static body of fact is the essence of science.<sup>2</sup>

The teacher's assistant in the chemistry project will assist the teacher with instruction since it is one aim of this project to demonstrate the ways in which a teaching assistant can help a chemistry teacher work with a class as large as 35. The role of the assistant varies with each phase of the chemistry course, moving in general through the following sequence:

1. Preparation and presentation of specific topics to the whole class or one sub-group of the class.
2. Helping to set up apparatus and prepare demonstrations.
3. Gathering apparatus and information from many sources.

<sup>1</sup> William O. Stanley; Harry S. Broudy; and R. Will Burnett, editors. *Improving Science Programs in Illinois Schools*. (Urbana, Illinois: University of Illinois Office of Field Services), P. 51.

<sup>2</sup> Paul F. Brandwein; Fletcher G. Watson; and Paul E. Blackwood. *A Book of Methods*. (New York: Harcourt, Brace and Company, 1958), P. 31.



(a) Students in advanced problems in science have their own room for study and project work.



(b) French students enjoying a play from the *Comedie Francaise* during a laboratory period.



4. Supervising laboratory work.
5. Helping pupils with problems of supplies and equipment and freeing the teacher to deal with more abstract and fundamental questions raised by students.
6. Assuming responsibility for some individuals in the final individual study phase.

In addition, the assistant carries on such routine duties as grading tests and examining assignments.

#### INDEPENDENT HONORS WORK IN SCIENCE FOR SENIORS

Before the course Advanced Problems in Science was organized three years ago, some pupils who were competing in the Westinghouse Science Talent Search did more work, learned more, and demanded more of teachers than in any formal course in science. The Advanced Problems course was established to provide a means by which independent study by superior students could be assigned credit and to provide regular helpful supervision, facilities, and materials for those pupils whose abilities were advanced far beyond the high-school level.<sup>3</sup>

We hope that a careful analysis and evaluation of this course during 1958-59 made possible by support of the Commission on Staff Utilization will further demonstrate its feasibility in many schools as a practical set of procedures by which the needs of the most highly gifted students in science may be met.

The course in freshman science with new content and a laboratory emphasis developed at University High School, the three projects in the teaching of science supported by the Commission on Staff Utilization, and the Physical Science Study Committee Physics course now in its second year of experimental tryout in University High School make up a full program of secondary-school science. This program begins with an integrated two-year sequence in the physical and biological sciences which provides a basis for more specialized work in chemistry and physics. The basic sequence and one or both of the specialized courses in chemistry and physics prepare the unusually superior student for individual work in the Advanced Problems course. We are testing this total program as well as each segment on the assumption that it may provide new and appropriate content from rapidly developing fields of science as well as provide laboratory experiences through which pupils discover basic concepts.<sup>4</sup>

#### FRENCH

In place of the regular daily class, students in fourth-year French meet with the teacher two periods per week and work independently, using prerecorded voice tapes, books and other written materials, and teacher-

<sup>3</sup> Paul Westmeyer, "Just Stand Out of the Way!" *School Science and Mathematics*, 57 (November, 1957), pp. 643-646.

<sup>4</sup> Stanley et al., *op. cit.*, p 53.



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<sup>4</sup> Stanley et al., *op. cit.*, p. 55.

prepared study guides three or more periods per week. On the days when the students meet with the teacher, the students are asked to listen again to some of the materials that were assigned for the week. The teacher stops the tape recorder occasionally and asks questions on the materials, or the students ask questions of each other. There are several types of materials used each week—conversations, stories, plays, and grammar. The students are asked to give conversations with other members of the class, basing them on the conversations they have listened to during the week. Dictations are given and corrected in class so that pupils can see their errors and be helped to correct them by analyzing their mistakes with the teacher. When plays are being studied, the pupils present some of the scenes. The pupils make lists of vocabulary and idioms in the lesson and are helped to use these. From time to time, the pupils are tested by having them listen to stories which they did not prepare, and their progress in ability to comprehend is noted. The students are given an opportunity to record their voices on tape and then these recordings are analyzed for pronunciation.

The hypothesis that advanced language students learn as much in this program as in the conventional five periods per week of group instruction will be tested by comparing results of this year's course with results from previous years.

Students from Urbana High School come to University High School for the two periods of class work each week. Students from University High School go to Urbana High School for a similar program in Latin III. In this way, two high schools in the same community are combining small enrollments into sections of more ideal size and each school is sharing a highly qualified teacher with the other.

#### INCREASED RESPONSIBILITY FOR SENIORS

Following discussion with parents and the students themselves in the spring of 1958, members of the senior class were excused from attending study halls and were given the responsibility for managing their own time when they are not in class beginning in September 1958. Continued enjoyment of this freedom is dependent on each pupil's maintaining his academic and other responsibilities at a creditable level.

Under this procedure, the study-hall situation in which the student is tempted to see if he can foil the study-hall teacher's attempt to get him to study is changed to a situation in which the natural rewards of study and the natural consequences of failure to study will be fully operative, unmediated by a study-hall supervisor. Further, this increase in responsibility for individual management of time is seen as approximating the level of responsibility commonly expected of college freshmen. Close contact between the individual student and his counselor is maintained during the senior year in order that maximum learning may result from the student's experiences in making use of time. In addition to frequent contacts between student and counselor during the senior year, members

of the class have agreed to furnish data during their first year in college on whether, in their opinion, this program has aided their adjustment to the college environment.

#### THEORETICAL BASIS OF THE FIVE STUDIES

The theoretical basis of these studies is related to the general hypothesis that students learn more when a considerable portion of their time is spent in activities that are self-directed toward the solution of problems which concern them than when all or almost all their time is spent in activities directed and planned by others. A discussion of philosophical issues underlying this hypothesis is found in chapter 11 of John S. Brubacher, *Modern Philosophies of Education*.<sup>5</sup> Discussions of psychological issues and summaries of related studies are found in Blair, Jones, and Simpson's *Educational Psychology*, especially chapters 7 and 8 on motivation and interests and attitudes.<sup>6</sup>

<sup>5</sup> John S. Brubacher. *Modern Philosophies of Education*. (New York: McGraw-Hill Book Company, 1939). Pp. 248-274.

<sup>6</sup> G. M. Blair; R. S. Jones; and R. H. Simpson. *Educational Psychology*. (New York: The Macmillan Company, 1934). 601 pp.



Senior students discussing their use of time with a counselor.

## D. Staff Utilization with Talented Students in a Small High School During the Summer Months

RAYMOND H. QUENSEL

**H**OW do your talented students spend the summer months? Does earning a few inflated dollars and participating in summer recreation take precedence over all creative thinking for three months? This is not so at Newark Community High School. Why did 24 out of 125 students at Newark pay tuition to attend a six-weeks summer session?

### PURPOSES OF THE STUDY

The purpose of the experiment was to provide challenging educational opportunities for students of a small school who seem to have abilities and talents and better to utilize a portion of our staff. Some of the specific objectives were:

1. To increase the range of knowledge and skills.
2. To develop alertness.
3. To develop attitudes of critical thinking.
4. To develop the knack of working independently—to plan, to execute, to judge.
5. To develop ability to share in undertakings.
6. To develop leadership.

### HOW WE BEGAN

The Board of Education of Newark High School and the PTA were canvassed on their impressions of the proposed program and the probability of the approval of the study by the NASSP Commission and the Fund for the Advancement of Education.

Student interest was sampled by questionnaires in grades eight through twelve. Eighth-grade students would be incoming freshmen so they were included.

The principal then talked to each member of the high-school student body and the eighth-grade students. Each member was given written explanations of the proposed program and asked to sign and return if interested. A similar written explanation was mailed to parents with children in grades 8-12. Those who expressed interest and those who the staff thought would benefit most from an accelerated program were sent personal letters by the members of the staff.

### WHAT WE DID

Pupils who wished to enroll in the project indicated interest in the general areas of science, mathematics, and communication. The stu-

Raymond H. Quensel is Principal of the Newark, Illinois, Community High School.

dents worked at their own pace, exploring with capable instruction their own interests. They used materials not normally available to high-school students—things like rockets, language records, library cataloguing methods, and emergency first aid and blood typing equipment. One group shot a rocket up in Newark. Another group began a speaking-knowledge study of Spanish. Some read historical and scientific biographies, concentrating, among other things, on unusual new words to build vocabulary. Modern algebra—the kind where parallel lines do meet, but at infinity—occupied hours for another study group. The Newark Fire Department's emergency truck was ransacked for devices and techniques that might have a bearing on their thirst for scientific knowledge.

No formal classes, as such, were conducted. Each morning at 8:30 A.M., students met together for a general session where common problems, aims, and objectives could be discussed, after which each student followed his area of interest until 11:30 A.M.

Each learner was encouraged to work independently in some desired area with staff members available as consultants, accelerators, and stimulators of the learning process. Staff members spent the afternoon planning for the students' anticipated hurdles and making notes on the morning's experiences.

#### WHAT WORKED

1. Students were motivated in general by the program, and yearning for learning remained throughout the six weeks.
2. The members of the teaching staff participating in the study retained their initial enthusiasm and seemed to gain even more interest as the learning progressed.
3. Students seemed to learn easily by working independently.

#### WHAT DIDN'T WORK

1. We didn't enroll all of our top students.
2. We had hoped that the interest span of our top students working independently in a field of interest would run the full three hours per day.
3. Several of our students were given excused absences to attend Boys' State, Conservation Camp, 4-H Fair, Bible Class Teaching, FFA Judging Contest with the tendency to hinder our program. Only 20 of 24 students were able to take all of the "before" and all of the "after" tests.

#### PRELIMINARY EVALUATION

The consensus of the staff was that the students adjusted well to the techniques used and definitely matured in attitudes toward study habits. The staff also felt that the knowledges and skills of the students increased as much as or more than their expectations. And a cursory examination of the data indicated a gain in achievement.

The teachers said that their knowledge of subject matter was challenged and their mastery of teaching techniques was enriched by the experi-



ments. They are making use of the accelerated devices in the present school year.

The cost to the district was not excessive and should decrease in each succeeding year. Mr. Forrest Christian, President of the Board of Education said: "Without exception the reports coming to me concerning this program have been favorable. These comments have come from students, parents, and the teachers that participated in the experiment. . . . The school's experiment did not interfere with the custodian's summer work. Requests have been made for the continuation of a similar program next year.

**E. Eleven Studies Are Started in the  
Arlington and Prospect High Schools,  
Arlington Heights**

H. L. SLICHENMYER

DESCRIPTION OF THE DISTRICT

TOWNSHIP High School District 214 is a two-township, 66- $\frac{1}{4}$  square-mile district in suburban Cook County, Illinois, about 25 miles northwest of Chicago. The population of the district, increasing rapidly, is now approximately 65,000. Within the district are six separately organized towns, nine public elementary-school districts from which we receive approximately 80 per cent of our students, and seven parochial elementary schools. The high-school population is divided between two buildings: Prospect High School in Mt. Prospect, housing 1,850 freshmen and sophomores, and Arlington High School in Arlington Heights, housing 1,525 juniors and seniors. Both buildings are scheduled to become four-year high schools. The enrollment has more than doubled in the past four years and is expected to more than double within the next four years. The faculty numbers 176.

The high-school program is comprehensive. Entering freshmen have a median Otis I.Q. of 110, and standard achievement tests show the student population well above average for their age group. About 60 per cent of the graduates enroll in college.

Eleven staff utilization projects are being initiated this year. Our goal is to improve the quality of instruction while keeping pace with the rapid increase in enrollment. The projects are grouped for description into seven categories, since similar activities are being carried on in several studies.

STUDENT AIDES

An attempt to interest students in the teaching profession is being made by teachers in general mathematics and chemistry. Students in advanced

H. L. Slichenmyer is Superintendent of Township High School District 214, Arlington Heights, Illinois.

courses in these subjects have been selected as student aides to assume some of the routine duties of the teachers, such as administering tests, correcting papers, helping individual pupils or small groups with specific problems, or assisting in the laboratory. In addition to providing an opportunity for students to experience some phases of teaching, the project relieves the teacher of certain time-consuming duties so that he may have more time for preparation and instruction. Recognition of these teacher aides for outstanding work and the accompanying prestige in the eyes of other students are expected to act as a stimulant to other talented students.

#### TEAM APPROACH

Six teachers are experimenting with a team approach: two in general mathematics, two in Core 1 (a fusion of introductory social studies and English), and two in world affairs. These projects permit one teacher to work with those whose background may be inadequate in certain areas or with those who may have similar strong interests in specific fields, while the other conducts the activities of the rest of the class. A wider selection of materials for the course is obtained through the use of the experiences of two teachers—students in the classes are grouped at times according to their interests, background, or achievement. Each teacher has the opportunity to present material or supervise the study in areas of his competence. When routine activities are necessary, such as supervising tests, one of the teachers is afforded additional time for preparation or evaluation. The daily association of teachers in such projects results in an exchange of ideas and methods and is of mutual benefit to them.

#### CHEMISTRY-PHYSICS INTEGRATION

In a project preparatory to college-level courses in chemistry and physics, an accelerated physical science course is being taught to three sections of sophomore students selected for their intense interest and demonstrated ability in the physical sciences. Chemistry and physics are integrated; and by careful selection of topics and experiments, the essential concepts ordinarily taught in these high-school subjects are being included in this sophomore course. Students that are successful in this project will be eligible for college-level courses in chemistry and physics, which will also be taught as a combined course during the junior and senior years.

#### LAY PERSONNEL

Two projects utilize lay personnel to replace the professional teachers. In each building the lay person is employed to supervise study halls for half days. One of these men is a retired railroad employee who had been in charge of the railway police for an entire line while the other man was a former supervising principal in a large metropolitan high school. Early experience seems to indicate that study conditions are as de-

sirable in these study halls as in those manned by regular faculty members. The second project of this type involves the employment of a lay person in lieu of an additional librarian. With training, her work will become akin to that of the professional librarian who acts as her supervisor.

#### MOBILE AUDIO LABORATORY

A separate project has been organized in the foreign language department to improve the utilization of audio equipment. A mobile laboratory consisting of a tape recorder, record player, amplifier, and ten sets of earphones has been constructed. Its use is being coordinated by a member of the department. The laboratory is available in the classrooms, and can also be used during the activity period at the end of the school day. Graded material has been taped by native speakers of the modern languages. This material is used to practice comprehension, take dictation, and imitate pronunciation. The mobility of the equipment extends its usefulness to all foreign language classrooms. Its use should produce greater confidence and spontaneity on the part of the students when faced with the need to use the foreign language.

#### RESEARCH

A series of evaluative studies is being directed by the district's director of testing. These include studies of the effect of physical environment on standardized testing programs, the methods for ability grouping, the tools for prediction of college success, a follow-up of students to evaluate the high-school program, and the establishment of norms for our district on standardized testing programs. The director of testing is also assisting in the development of research designs for the other staff utilization projects.

#### ENGLISH-LATIN COMBINATION

An instructor qualified in English and Latin is combining these two subjects for one section of sophomore students enrolled in English II and Latin II during consecutive periods. The instructor will take advantage of literature related to Rome from the English course, and language and grammar similarities between the two subjects, in order to emphasize an analysis of language patterns, the logic of semantics, and language transference.

The goal in all these projects is to improve the utilization of the teachers in a rapidly expanding high-school district, and to improve instruction. It is not anticipated that all will be successful, or that all of the results will be applicable to all schools. Already it is evident, however, that the staff utilization projects are proving stimulating to the entire faculty.

## F. Science Lecture and Team Approaches in English Are Tried in Mattoon High School

H. A. CLAWSON

### SCIENCE IN GENERAL EDUCATION

ONE of the most interesting and exciting experimental programs under way at the Mattoon High School is the new approach to teaching the non-scientifically minded students about science. At present, we plan to present a series of about twenty lecture-demonstrations to a volunteer group of about thirty students. Of course, this can be repeated to larger groups if it proves effective. These presentations will be about science oriented topics, a few of which are: Science and Health; The Next War; Exploration of Space; Nuclear Energy; and Scientific Method. In the presentation of the topic, scientific facts are to be stressed, but in a way that the student will have some understanding of the problems involved. It is hoped that, as a result, these students will have better a understanding of the importance of scientific research, a greater appreciation of the importance of scientific developments in our daily lives, and will become more informed citizens.

#### *Organization*

About fifteen or sixteen of the series of lectures will be presented by regular members of the teaching staff of the school. The others are being prepared by professional men and women of the community. The lecture or demonstration must be well planned, organized, and presented in a way that will capture and inspire the student audience.

Throughout this first series of lectures, careful notes are made on the students' reactions. We are particularly interested in finding from each his own reaction to each lecture, his attitude towards this type of course, and any changes he will admit in his attitude towards science. Perhaps many of our measures in these areas will be subjective, but we are trying to develop some objectivity in our evaluative instruments.

No one single person bears the responsibility of this type of instruction. The assistant principal, the director of guidance, and the writer serve as the steering committee. All topics are assigned through the committee, which also helps in preparing the outline of each presentation. In this way, some continuity in the series of presentations has been established.

#### *Outcomes*

What are we trying to do? Frankly, we are not too sure. We think we have an idea that may develop into a full-fledged part of our curriculum—a kind of science orientation course will help our young people become better fitted to assume the responsibilities of citizenship. Can a staff

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H. A. Clawson is Principal of the Mattoon, Illinois, Senior High School.

of seventy teachers—such as we have—continue to present top-notch presentations without “running out of gas” in a year or two? These questions cannot be answered yet, but we are very optimistic.

We hope to interest some of these students in science, and one criterion we hope to use in evaluating our results is an increase in the enrollment in science courses. We also hope to note a more wholesome, respectful attitude on the part of students towards scientists.

#### OUR ENGLISH EXPERIMENT

Our team approach to teaching sophomore English is less spectacular but equally as interesting. In this team approach, three sections of sophomore English are scheduled to meet at 2 P.M., each in a regular classroom and each with an assigned teacher. The students in these three sections are not selected; they are there merely as a result of normal registration procedures. The three teachers who were assigned to these sections had volunteered to carry out the experiment.

##### *Experimental Procedure*

The year's work in this English course has been carefully planned and grouped into rather well-defined units. At the beginning of each unit of work, the three sections are brought together for a day or two of orientation and then pre-tested. On the basis of their performance ability as shown on these pre-tests, the group is re-divided into top ability, middle, and low-ability groups. Each teacher then takes one of these groups for instruction in the work of the unit. The allocation of the groups for each teacher has been worked out in order that special abilities and interests of the teachers will be utilized to the fullest extent. No one teacher always draws the top or the low group because these are passed around as much as possible.

We think we are “on the way” to discovering newer and better ways of teaching English. The flexible regrouping of students for each unit should help us in meeting their needs more adequately. There is no particular stigma attached to a group, as a student may be in the low group for one unit and in the top group for another. We already know that the special abilities of the teachers will be used more effectively, as we found that their special interests and abilities determined, almost without exception, which group of students for each unit fitted them best. We also find that the team approach is an excellent device to induct new teachers into the profession. One of our team is an experienced teacher with unusually high ability—one of the best. The other two are just entering their first year of teaching. Each made excellent records in college and each apparently possesses the qualities that make a successful teacher. These new teachers have started their work with more confidence and poise because they are members of a team, and the team leader is ready with advice and counsel when the problems arise.

### *Preparation and Staff Reactions*

The three teachers in the project spent two full weeks during the summer in selecting and grouping materials into units, in preparing pre- and post-unit tests, in making out bibliographies for enriching the course, and in searching through the library for supplemental materials. Although they were successful in preparing a comprehensive framework for the project, much remains to be done as the school year progresses.

No change is made without misgivings and without some resistance. Some of the teachers of our school are mildly interested in the staff utilization experiments and a few are following them with a great deal of interest. There are others who are just not interested. The enthusiasm of the few is beginning to spread, and others are discussing various ideas and possibilities.

I have found that informal channels of communication are very helpful in getting started on projects of this type. We have spent very little time in the discussion of these projects in staff meetings, but in the lounge, over a cup of coffee, our discussions in small groups of two or three teachers have been quite lively and rewarding.

Our superintendent and the Board of Education have given us a rather enthusiastic blessing in our experimental programs. The local press and radio have commented editorially that they were proud of the schools for being a part of the nation-wide experimentation that is being carried on in the search for better schools.

### **G. Staff Utilization Studies in J. Sterling Morton High School and Junior College, Cicero, Illinois**

WALTER L. COOPER

**S**TUDIES of the more effective utilization of a teacher's time may be directed toward the discovery of ways in which an individual teacher may reach a greater number of students with at least equal effectiveness. Studies may also be directed toward the objective of determining ways in which a reorganization of the use of a teacher's time may produce more effective results in the outcomes of the learning process. Both objectives are important. It is largely upon the basis of the latter objective that the studies being conducted at the J. Sterling Morton High School and Junior College were selected and are being developed.

Four different studies are in progress involving the participation of nine staff members, five division heads, and the coordinator of the project. Approximately two hundred and forty students are directly involved with an additional four or five hundred participating in the project in a less direct manner. The Board of Education and the com-

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Walter L. Cooper is Principal of the J. Sterling Morton High School and Junior College, Cicero, Illinois.

munity are sufficiently interested in the studies to the extent that provisions were made for the purchase of any necessary equipment in addition to allotting funds for one third of the estimated cost of the project.

#### USE OF TEACHING TAPES

One study is concerned with the potentialities of voice tapes as a means of improving instruction through a more effective utilization of the teacher's time in the teaching of beginning shorthand. This study involves one instructor with an experimental group and a control group. Both groups are under the direction of the same instructor.

In the experimental group, instruction will be done exclusively through the use of locally made tapes, a device which permits the teacher to spend much of his time moving about the room helping students with writing techniques, posture, writing positions, and other factors which may contribute to proficiency in the study of shorthand. The control group will be instructed in the present teacher-oral-explanatory method.

A second study, again using tapes, has a greatly different objective. This study involves the use of tape-recorded lessons in the instruction of beginning Italian. Two instructors are participating. One is a highly qualified person in the Italian language whereas the other is a skilled language teacher, but not trained in Italian. Daily lessons and units are prepared by the trained Italian teacher in cooperation with the one who is teaching the class. In preparation for this study, five tapes were developed and used with pilot groups during the spring semester of 1957-58. During the summer of 1958, several lesson tapes were prepared for use in the study. As the year progresses, improved techniques in the preparation and use of these lesson tapes should be expected to result. Both teachers have been released from some teaching responsibilities in order to have time for cooperative work.

#### LANGUAGE LABORATORY

A third study is in progress to determine the extent to which language instruction can be more effective through the use of a language laboratory, to develop an effective means of using the language laboratory, and to ascertain the extent of the pre-service and/or in-service training needed to make more effective use of this method. The Board of Education has provided a well-equipped laboratory with individual recording and listening stations, and two teachers have been released from some teaching responsibilities to coordinate the use of the laboratory with other language teachers.

#### TEAM TEACHING

The fourth study involves a team approach to the study of American History and American Literature. Four instructors are participating in this study, each with two sections of students. The instructors are working by pairs, one pair in the East building and the other pair in the



West building. The two sections in each building are scheduled consecutively during the last two periods of the day. The students in the fifth-period American Literature are the same students sectioned to the sixth-period American History, and conversely so with the fifth-period American History.

The four instructors, together with the division heads, held a one-week workshop prior to the opening of school at which time major units of study were developed with attending bibliographies for both English and history. This excerpt from a preliminary report is illustrative; "To develop reading in depth and better understanding of history, the English classes will feature a given literary work which will illustrate the chronology being studied in the history classes. Or, to give the talented student some concept of cultural history. *The House of Seven Gables* will be read, not only as an American novel, but also it will be studied as a facet of the American mind."

As previously indicated, each of the nine instructors participating in the project is provided with one period of released time from other teaching responsibilities for the purpose of cooperative and individual planning. Wherein cooperative planning is required, the time released is coincident. Throughout the extent of the studies, consultant services will be available to assist the participating instructors in preparation, presentation, and evaluation.

#### H. Intern Program, Team Teaching, and Language Laboratory at Glenbrook High School

WESLEY G. BOVINET

MANY phases of secondary education, such as better selection of personnel, school organization and administration, school plants, teacher welfare, building construction, student and teacher relationships, learning resources, staff welfare, curriculum content, evaluation, communications and public relations, and the use of new approaches and techniques, are receiving constant attention at Glenbrook High School.

In recent administrative meetings conducted by its superintendent, Dr. N. E. Watson, it has been pointed out time and time again that one of the biggest problems facing school administration in the years ahead is the matter of staff. Concurrent with that is the shortage of time and space which, like the poor, is always with us. We are very much concerned, however, with staff and the quality of our educational program and perhaps how it can be improved through better staff utilization.

Glenbrook High School, participating in the state-wide cooperative study of staff utilization, has six-projects or studies underway.

Wesley G. Bovinet is Assistant Superintendent of the Glenbrook High School, Northbrook, Illinois.

## PROJECT I

In Project I, nine beginning teachers have been given a reduced work load to meet for one class period each day in an internship, in-service program.

*General Requirements*

1. Candidate must come from the upper quartile of college or university classes. Several techniques will be used to select only superior candidates.

2. They should have achieved an A-B record in college or university.

3. They will be carefully screened as to personality, character, and general integrity.

4. They may be expected to present acceptable results from psychological, achievement, and other examinations.

5. They must indicate a sincere intention to become a career teacher.

6. They must promise tenure of not less than three years at Glenbrook.

7. The intern should plan to begin work on the Master's Degree not later than three years following the year of internship.

*Conditions Affecting Teachers During Year*

1. Approximately two-thirds of a basic class load (basic load is 6 periods in a 9-period day) will be assigned, depending upon the ability of the school district to finance this program.

2. This year is *not* practice teaching. It counts toward tenure.

3. The intern will enter service at Glenbrook at the beginning salary—whatever that may be—as determined by the Board of Education.

4. The intern will assist in student activities of his choice. No attempt will be made to enforce supervision or assistance in activities merely "for the experience."

5. One period daily will be devoted to in-service training. Interns will meet with administrators, counselors, master teachers, department chairmen, board members, resource people, consultants, community leaders, and any others who may assist the beginning teacher in orientation.

6. One period daily will be devoted to planning by the teacher. This may be done alone or with the assistance of anyone he may request.

7. The teacher will work regularly on his own evaluation with those who are assisting him. Experiments are desired to determine effective instruments of evaluation. Interns may wish to experiment in this area.

8. The teacher will be given every opportunity to understand the organization and philosophy of Glenbrook by his assignments and experiences.

9. This is not a method of securing inexpensive teachers. Intern teachers will not be assigned to "busy work."

*General Statements*

1. At the time the teacher begins work on the Master's degree, a complete record with explicit recommendations will be presented to the university (and the teacher).

2. Financial assistance for attendance at professional meetings will be provided during the internship period.

3. This program intends to enhance the dignity of teaching. It proposes to attract young people who are "intellectually precise, secure in their conception of themselves, and accustomed to participate without self-consciousness in the more generous aspects of our cultural heritage."

4. This program proposes to develop the kind of teachers in the kind of school where pupils think of teachers as individuals whose life it would be a pleasure to share.

5. This program proposes to assist young people who have deliberately chosen teaching as a profession.

6. This program proposes to devote all the resources of the school to develop in young teachers a sense of satisfaction in taking part in the growth of high-school boys and girls.

7. We hope to interest these young teachers in individual problems for investigation and experimentation (methods of obtaining cooperation, building better attitudes, attitude measurement, better disciplinary techniques, etc.).

#### *Some Goals*

1. Cooperative action in dealing with problems.

2. A better understanding of the problems of students and the school in general.

3. Inspiration, courage, and assistance in attacking problems.

4. Development of a better understanding of democratic living.

5. Understanding the relationship of the school to the community.

6. Clarification and definition of problems.

7. An understanding of the teacher's strengths, weaknesses, direction of needed growth, and the nature and value of sources of help.

9. Ideas, techniques, procedures, etc. made available and clear for use in classes.

10. Participation in experience which broadens the teacher's educational outlook.

11. Understanding ways and means by which pupils may share in planning, evaluating, and executing classroom experiences. The extent of such procedures must be understood.

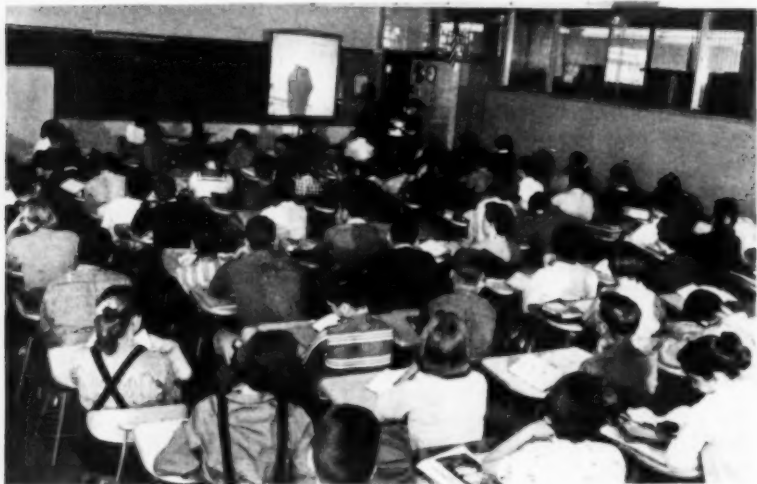
12. An analysis and evaluation of the effect of various pupil experiences on their behavior and progress.

13. Growth in service by relationship with fellow teachers and others.

14. The development of teachers who are critical and experimental in their approach to teaching.

Although our agenda for the year with the interns is at this point incomplete, we expect our program to run somewhat along the following:

1. Use the *Minnesota Teacher's Attitudes* with the interns. Discuss attitudes toward: fellow teachers, department chairmen, administration, counselors, teaching as a profession, and role of each.



Glenbrook's Math Department chairman using the Vu-Graph with the 80 students in plane geometry.

2. Present philosophy of administration as built into the school: self-evaluation; evaluation by department chairmen, administration, and pupils; evaluation as related to salaries.
3. Analyze critical incidents affecting teaching.
4. Develop master teacher concept.
5. Explain philosophy, functions, method, and procedures in guidance program, including disciplinary counseling as we use it at Glenbrook.
6. Study teacher participation in curriculum building, teachers and parent as a team, use of teaching resources, and mental health in the classroom.
7. Investigate teacher morale: What affects it, kinds of morale, and techniques to test morale.
8. Test attitudes at end of year.
9. Attempt to establish priorities in the minds of interns. What is important to them the first year?
10. Evaluate the total year's program on this in-service program.

#### PROJECTS 2, 3, AND 4

Project 2 is a class of eighty students in plane geometry taught by a team of two teachers; Project 3 is a class of seventy students in English IV taught by a team of two teachers; and Project 4 is composed of three classes of forty-five students each in general science taught by one teacher plus a non-certificated, para-professional as a teacher aide. In these three projects we are trying for a number of things. We are very

much interested in the present research and experimentation that has already been done. We hope to help substantiate some assumption or refute others we feel may not be well enough supported by research. We should be able to say with these large classes that they are doing a better job of instruction, or at least as well as the conventional size with one teacher. We are taking a look also at teachers competencies, programs, and assignments. We believe, at this point, that large classes have some implications for staff utilization—leaving time for preparation, student conferences, and proper evaluation. Too, we are taking a look at the teacher and student roles in these large classes. We hope to see how much more use of electronic and mechanical aids can be used to improve visibility and communication for students as well as the quality of the presentation. In the geometry class, for example, wide use of the Vu-Graph is now being made as well as inexpensive hand microphones hooked to small PA systems to enable all students to hear equally well.

#### PROJECT 5

Project 5 uses a para-professional in the supervision of study halls. This person is a college graduate but non-certificated as to teacher requirements. We think it can readily be said at this point that the aide handles her study halls as well as, if not better than, some of our certificated people. We are very pleased with her work and the way this situation is working out.

#### PROJECT 6

Project 6 uses a disc language laboratory in the teaching of Spanish, German, and French. Here considerable research was done on the various types of laboratories before the decision was made to install discs instead of tapes in the laboratory. The initial cost was about \$400 each for four booths. We intend to add to this as we go along. An additional, separate tape recorder is used first, then recorded on the master discs. Four discs are recorded at one time from the tape, one for each of our booths. Master discs are kept on file and material may be erased when no longer needed. Plans also include: use of student at present only from third and fourth years of language study; presentation of material at low to high speeds; material recorded by a variety of native speakers; variety in drill material; and development of a testing program for aural-oral work.

Evaluation after only one month of operation revealed considerable improvement in student performance. Similar material, given only once orally as part of a text, brought excellent results. Greater facility in the use of the language was apparent in the classroom. The laboratory provides motivation for perfecting techniques on the part of students for which there is never time in classes of thirty or over. Student enthusiasm is very high with the program. Our future plans, even for this year, include the establishment of control groups to test and evaluate the effectiveness of the program.



The chairman of Glenbrook's Foreign Language Department supervises a student in the use of the foreign language disc laboratory.

## I. Three Experiments in Staff Utilization at Urbana

R. H. BRAUN

### HOMOGENEOUS GROUPING AND ACCELERATION

IN EVERY community, high-school students differ widely in ability and achievement. The student body of the Urbana High School, a university community, is no exception. In fact, the student body is probably a representative sample except for a slightly larger proportion of students in the upper quarter. For some years the Urbana High School faculty has attempted to provide partially for a diverse school population by homogeneous grouping by single subjects. Remedial classes were set up for the very poor students and special classes in English, mathematics, and science were arranged for superior students. In general, the faculty was pleased with the results; objective test results were encouraging, and the students accepted our grouping procedures somewhat as a matter of course.

Although the faculty felt that homogeneous grouping was the most far-reaching step we had taken, many realized that some of the superior classes were quite capable of going far beyond what we had planned for them. If the average ninth-grade student can take algebra without too much difficulty, what is our excuse for holding the very bright students in the same lock-step of algebra in the ninth grade and plane geometry in the tenth, or general science in the ninth grade and biology in the tenth? Quite obviously the superior students were capable of accomplishing much more and were being held back by a traditional, unimaginative school program.

Three years ago we urged superior ninth-grade students to take biology instead of general science. Our only requirement was a B+ grade in eighth-grade general science. At the end of the year, scores on the *Cooperative Biology Test* showed that the better-than-average freshmen had a median score at the ninetieth percentile on the test. This median score was far higher than the median score of the sophomores, juniors, and seniors taking biology. Clearly the brighter freshmen were capable of doing excellent work in biology. Our conclusion was verified in the two following years.

The success of the bright freshmen in biology encouraged us to take the next logical step. Why could we not start our program of accelerating the bright students in the junior high school? The Urbana Junior High-School principal, Wendell Anderson, had been giving this considerable thought, and we were able to secure the cooperation of the senior and the junior high-school faculties in the experiment described below.

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R. H. Braun is Principal of the Urbana, Illinois, High School.



Urbana Junior High-School students who excelled in arithmetic were permitted to take algebra as eighth-grade students. Outstanding students in English took ninth-grade English in the eighth grade and superior eighth-grade science students were enrolled in ninth-grade general science. The selection of the students in each of the three areas was based on school marks, achievement tests, and aptitude tests. Parents were required to approve the student's enrollment.

We are hopeful, or perhaps I should say confident, that these eighth-grade students will demonstrate their ability to do excellent work in the ninth-grade subjects. We will compare their scores on standardized tests with the scores of ninth-grade students of equal ability.

If the eighth-grade students do good work in these traditionally high-school subjects, they will have one to three units of high-school credit when they enroll in high school. Two alternatives are open to them. They may take more subjects in high school during their four years there or they may graduate in three years and go on to college. For those students who choose to remain in high school four years, we propose to offer advanced courses which also carry college credit. In addition, since the University of Illinois is so close, we hope that our superior high-school seniors will be permitted to enroll in one or two courses at the University of Illinois. It would be possible for them to have fifteen to twenty hours of college credit when they enroll as college freshmen.

#### AN AIDE FOR THE TEACHER

One of the time-honored beliefs of people in education is that better teaching is done in small classes. The members of the Urbana High-School faculty were rather firmly convinced of the efficacy of small classes, but they felt that under certain circumstances larger groups could be taught with some increase in learning. The nation-wide teacher shortage, mounting educational costs, and the interest in better staff utilization led them to try an experiment using teachers' aides.

After much thought, the decision was made to experiment with the use of teachers' aides in shorthand, bookkeeping, business problems, and typewriting. It was felt that an aide or assistant would be more effective in relieving the teacher of non-teaching duties in these fields which were primarily objective and where discussion was relatively unimportant. Classes of fifty students each in shorthand, business problems, bookkeeping, and typewriting were set up with a teacher in charge, assisted by a teacher's aide. The teacher's aide serves largely as a secretary to the teacher, relieving him of duties which she can perform as well as he. These include checking attendance, grading papers, averaging grades, helping prepare lesson assignments, putting assignments on the blackboards, etc. Various audio-visual helps such as tape recorders, voice amplifiers, and opaque projectors are being used.

We consider this a very modest kind of experiment and feel that it will be successful if we can answer affirmatively the following two questions: (1) Do the students in these large classes learn as much as

students in classes of 25 to 30? We hope to answer this by means of a series of tests given periodically throughout the year. The students' scores on these tests will be compared with scores made by classes of former years. (2) Do the teachers involved feel that their work has been more pleasant and more successful than it would otherwise have been?

At the present time the large classes in typewriting, bookkeeping, and business problems seem to be progressing satisfactorily, but we are experiencing some difficulty in the large shorthand class. Students in the rear of the room have difficulty seeing clearly shorthand symbols written on the chalkboard by the teacher. We do not have the solution to this problem at this time.

#### A COOPERATIVE PROJECT BETWEEN TWO SCHOOLS

The third staff utilization project is a cooperative one between the Urbana High School and the University High School in Urbana. Both schools have small classes in advanced French and Latin. The University High School has an excellent French teacher and the Urbana High School has an excellent Latin teacher. The schools are only a mile apart. Urbana High-School students are taking fourth-year French at the University High School and University High-School students are taking third-year Latin at the Urbana High School. Each school thus saves the cost of one class and has the services of two outstanding teachers.

In these advanced foreign language classes, extensive use is made of tape recordings. This is especially true in the fourth-year French classes. Many tapes were made by native Frenchmen, and the students may listen to these again and again. Another facet of this experiment is that these classes do not meet daily with the teachers in charge. The students are superior students and are permitted to work independently as much as possible.

#### J. Curriculum Enrichment in a Rural County Unit School System Through the Use of Material Aids—Pope County, Illinois

G. E. McKIBBEN  
W. R. BOGCESS  
J. H. HOBBS  
HOWARD WRIGHT

#### CHARACTERISTICS OF THE STUDY

THE population density of the county is low. There are 4,279 persons in an area of 238,080 acres or one person per 55.6 acres. The total stu-

G. E. McKibben is president and W. R. Bogcess is a member of the Pope County, Illinois, Board of Education; J. H. Hobbs is Principal and Howard Wright is Superintendent of Pope County Schools, Galconda, Illinois.

dent population (991) in 1957 averaged one person per 240 acres. The population in the county has declined from a high of 13,585 in 1900 to 5,799 in 1950. By 1957 the population had further declined to 4,279. The grade school population has declined from 3,148 in 1900 to 724 in 1957. The present high-school enrollment of approximately 260 is typical of 35.7 per cent of the high schools in the United States. The assessed valuation (for tax purposes) of the county is low—\$7,558,713 in 1957. Public land ownership is high with 76,823 acres (31 per cent of the total area) owned by the Federal government in the Shawnee National Forest. The county usually receives a total of only \$4,000 to \$6,000 per year from this federally owned area.

#### USE OF MATERIAL AIDS

Many teachers are not in a position to take advantage of the excellent teaching opportunities provided through the use of material aids. They need help both in planning and using such supplementary materials.

Commercial television is an aid which is being overlooked as a possible means of enriching an impoverished curriculum. All schools in the county are within range of stations at Paducah, Kentucky, and Cape Girardeau, Missouri. Both are affiliated with national networks. These stations carry numerous programs which have high educational values. Paducah presents two agricultural programs each week—one provided by the Kentucky Agricultural Extension Service and the other by the Dixon Springs Experiment Station of the University of Illinois (located in Pope County). An excellent daily weather report is provided by Cape Girardeau which shows the position of fronts, and pressure areas and gives daily temperature as well as other information. What would be a better method of teaching a science unit in meteorology than to keep a daily record of weather as it occurs across the country. In addition, news and special events programs would be of value in history, science, and social studies.

Models and mock-ups can be used to advantage in a number of subjects. Mathematical formulae can be illustrated with three-dimensional models as can atomic and molecular structure. Terrain models were widely used in World War II to familiarize troops with unfamiliar territory. In the classroom, scale models can demonstrate different crop rotations as related to slope and topography.

The value of moving pictures in teaching has long been recognized. This medium has probably been developed to a higher degree than any other teaching aid. Movies, however, are used to a limited extent in the Pope County schools. There are two reasons for this: (1) facilities are not available in most of the rural schools; and (2) teachers are not trained in the use of projection equipment, nor do many of them realize the wealth of material which is available.

"Home movies" have an extremely high human interest value, because people like to see themselves or their neighbors on the screen. This medium, as a possible teaching aid, has not been widely exploited. The potential, however, is great. For example, consider a chemistry laboratory experiment. The instructor must spend considerable time in describing the procedures. This could be filmed and shown by a student assistant. In the filming process, closeups could be made of critical points which would be more effective than the actual classroom demonstration. Many laboratory demonstrations could be filmed and shown several times, as a whole or in part, as necessary to clear up specific points.

An agriculture class could be shown good and bad conservation practices, filmed in their own county rather than in some distant location. They could see, in an hour period, examples that would require several days to visit on field trips. There is almost no end to the possibilities of the "home movies" idea in curriculum enrichment as well as efficient staff utilization.

#### WHAT MAY THE PROGRAM ACCOMPLISH?

The accomplishments of this proposed program cannot be determined in advance. This can be done only after it has been tried and properly evaluated. However, better educational opportunities should be provided for the children of the County. Since Pope County is typical of counties in southern Illinois, as well as in many rural areas, this study may serve as a pilot operation and develop a basic instructional pattern which could be used in many situations.

Curriculum enrichment, coupled with better teaching, should inspire the better students to go beyond classroom assignments in an effort to learn more about subjects which they like. It is often difficult to give even superior students that incentive by mere textbook teaching. In fact, they may actually become lazy because the textbook assignment itself may be too easy. Pope County may never be able to do justice to superior students, but, if they can be inspired to strike out on their own, then a considerable service has been rendered.

Pope County taxpayers have been very reluctant to vote additional taxes for the support of schools. The attitude of "What was good enough for me is good enough for my child" has been far too prevalent. The Unit District received a favorable vote largely because it provided additional funds without increased local taxes. It is possible that the proposed material aids program will demonstrate the benefits of an enriched curriculum so clearly that the money required to maintain and expand it will be made available. Personnel administering the material aids program could help create a favorable climate for this support by asking citizens of the county to observe the program in action. They might have special programs for adults in the various schools where films

of interest might be shown, particularly those which have been made of local situations.

We believe that the tests in determining the value of the study or project will be:

Does the study make the teaching more meaningful to the students?

Is the subject matter more graphically presented?

Do the students grasp and retain more knowledge by the use of the material aids?

Does such teaching method save time for the overburdened classroom teacher?

Do the teachers teach more effectively and instructively by greater use of material aids than by traditional methods?

Does the use of these aids actually save time?

Are the teachers happier with this method of presenting subject matter, and, are the students happier with this method of teaching?

We believe that the answers to these questions are "yes."

#### K. Development of Independent Study Skills in American History Classes in Fairfield

H. C. LARGENT

MARGARET THACKER

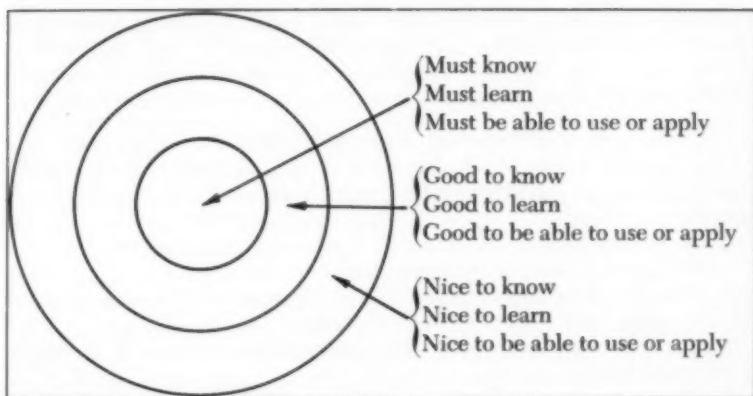
EDUCATORS have become more and more concerned because students do not seem to acquire sufficient abilities in independent study and thinking. Often through faults other than their own, the majority of students do not know how or what to study. This project is concerned with teaching students to develop study skills by applying certain methods to the study of American History. The plan being used was developed by Clarence W. Stephens of Southern Illinois University, Carbondale, Illinois. Mr. Stephens feels that his plan will help students acquire the ability to classify and evaluate content as to worth and value so that the student may read and study more effectively. We are using this plan in two of the five classes of American History. All the classes are heterogenous groups. We plan to compare and evaluate the methods the teacher has used previously with Mr. Stephens' plan in order to determine any further expansion of its use.

#### THE PLAN

One way that these skills may be obtained is through the use and expansion of the Navy Target Plan. The *must's* include only a small portion of the content. Some inclusions follow: (1) the broad principles

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H. C. Largent is Principal and Margaret Thacker is a teacher in Fairfield Community High School, Fairfield, Illinois.



or theories; (2) those learnings which have to be acquired for understanding of future content; (3) opinions of important groups and individual authorities in the field; (4) if applicable, the implications of the content as related to everyday modern living; and (5) if applicable, the determination of pertinent parallel relationships or differences between the past and the present. The middle ring in the target contains the *good* classification. Included are: (1) expansion of the *must's* to the extent that they are understood; (2) the implementation of broad principles or theories; (3) that which furthers the understanding of broad principles; and (4) some background or examples. The outer ring in the target contains the *nice's*. Included are: (1) filler material; (2) expansion of that which is good to know; and (3) material which only the better students would understand or remember.

#### METHOD OF PRESENTATION

The students were given a general idea of what we would be trying to accomplish. They were invited to ask questions to clarify any items they did not understand. At this point the students showed a decided interest in what we would be doing. The class discussed the essentials in learning how to study and agreed on five points which they felt were bare essentials.

The Navy Target Plan was explained and illustrations were used to show the students what to look for in studying. The class was assigned Chapter I. They were told to scan the chapter, then attempt to list the *must's* and *good's* from a second careful reading. The importance of reading the material prior to discussion and classification was stressed.

The instructor works with the class group during class discussions in selecting the *must's* and *good's* from the chapter, emphasizing why a particular sentence or passage is a *must*. A follow through with Chapter II, using the same procedure, was completed. It became clear to the

students that their opinions will differ widely among their peer group as well as with the instructor. Before one of the class periods during which the first two chapters are being analyzed, the teacher should introduce the procedure to be used in the workshop technique.

#### WORKSHOP WAY OF LEARNING

The general techniques to be used in this particular study will be listed. There are variations which can be utilized in more advanced groups.

1. Each class is divided in four groups of about eight students.
2. Each group selects a chairman and a recorder.
3. The chairman and recorder will be changed so that each member of the group will serve in each capacity.
4. The chairman obtains the opinions of each participant as to *must's*, *good's*, and *nice's*.
5. Majority opinion should prevail; however, the recorder should be able to indicate to the other recorders or to the total class the degree of acceptance by his own group.
6. The teacher meets with the chairmen and recorders of the groups and discusses with them their responsibilities. Through discussion with their group, she helps them draw up a list of rules which will aid in accomplishing their objectives.
7. The teacher calls the class together even after they are working in groups to review workshop procedures and to clarify any points necessary.
8. Each group classifies content in the same chapter.
9. The teacher visits each group to check on procedures being used and progress being made.
10. After all groups have finished, the recorders meet as a group, select a chairman, and exchange group opinion as to content value. This group makes a report to the entire class on their joint opinion.
11. The teacher expresses her opinion relative to the classification of content.
12. The class has an opportunity to contribute further to the classification.

#### AIMS

Some of the aims are listed below. You will readily see that many good features must be deleted due to space. These are the aims dealing with efficiency of study and learning of content.

1. To teach basic, fundamental knowledge of American History.
2. To stimulate the student to independent study and thinking.
3. To help the student acquire skills in how and what to study.
4. To help the student acquire skills which will aid him in his present and future needs.
5. To help the student gain ability to make decisions upon weighing the evidence available.
6. To help the student acquire the ability to evaluate himself.



## POSSIBLE VALUES OF THIS STUDY

These are only a few of the possible values we feel may be obtained by using this method of study and instruction.

1. Future teachers would have a procedure by which they could teach their pupils how to study.
2. Teachers would analyze their presentations somewhat more carefully.
3. Students could be expected to do more independent study and constructive and reflective thinking.

## CONCLUSION

While our experimental study is still in its infancy, we are not able to give any specific evaluation to how we are doing. We do feel, however, that any method which may help the students develop skills listed above should be tried. We also feel that any method which may improve teacher skill in preparation, presentation, and dynamic instruction is worth investigating and studying.

**L. Staff Reorganization Through Differentiation of Teaching Functions in the University of Chicago Laboratory School**

ROBERT OHM  
MORTON TENENBERG

QUALITY of instruction, meeting individual needs, flexible scheduling, fluid grouping, optimum class size, reduced teacher load, and increased teacher effectiveness are phrases descriptive of problems that have engaged the thought and action of many schools and individual members of the profession. The Laboratory School faculty has confronted these problem areas with a number of procedures and projects, one of the more promising of which has been exploratory changes in staff organization. The changes that have been tried adopted the general "team" framework in which two or more subject matter specialists have responsibility for two or more sections of students for a block scheduled period of time. The larger organizational unit made possible allocating of time in relation to the teacher-learning situation, subgroupings to be formed, dissolved, and re-formed using a wide range of grouping dimensions; and some differentiation of teaching functions and student roles. The results seemed to indicate the possibility of a break through on a number of organizational blocks to improving the quality of instruction.

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Robert Ohm is Principal and Morton Tenenberg is a teacher in the University of Chicago Laboratory School, 1362 E. 59th Street, Chicago 31, Illinois.

The present project attempts to extend the principle of differentiation of teaching functions in staff organization. An instructional team at the freshman level has been organized in the University High School. The base unit includes a teacher of English, social studies, science, and mathematics, plus a unit coordinator and fifty students. Although the subject teachers have additional classes, the unit concept is supported by an organizational pattern which delegates responsibility to the instructional team for (a) sub-grouping students within the fifty-student class; (b) determining time allocation within the scheduled three-hour block of time; (c) allocating the materials, equipment, and resources made available to the unit; (d) assigning and reassigning teaching functions among the members of the team; and (e) the best possible instruction in the subject areas.

We are proposing that the key to the effective operation of the instructional unit lies in the role of the coordinator as a nonsubject-matter teacher. The functions of the coordinator were selected from functions generally expected of all teachers plus those that need to be performed as a result of the specialization and differentiation leading to the team unit of organization. The functions of the coordinator are categorized and defined as:

#### *Administrative*

1. Develop and maintain records of individual progress of sufficient sensitivity and comprehensiveness so that they may be used in day-to-day teacher and/or student planning.
2. Develop and maintain the daily schedule of group composition, time, space, equipment, and personnel resulting from team analysis of the changing needs of the ongoing instructional program.
3. Coordinate use of technical equipment (tape recorders, projectors, feedback systems, task cards, *etc.*) for use by teachers as well as by individual students for independent study.

#### *Instructional*

1. Through familiarity with the total program, point out opportunities for subject-matter integration and re-inforcement of common objectives through correlated activities and make available the necessary resources for facilitating the integrative and correlative processes. Also point out instances where overlap or repetition seems to occur.
2. Assist subject area teachers when requested, either by working with small groups, under subject area teacher direction, giving presentations in areas of special competence, conducting field trips, coordinating projects designed to provide integration between subjects.
3. Coordinate assignment of homework, projects, papers, and tests to provide a reasonable distribution of the study load.
4. Set up and supervise a study area including individual and group instruction in study and research skills. Collect and coordinate the use

of the needed bibliographical, visual, mechanical, and electronic aids for the facilitation of independent study.

5. Have a concern for the total experience of the student. Contribute insights to instructional planning on age level characteristics, individual and group responses to subject areas and teaching methods, and the relation of peer group values and culture to the achievement of school objectives.

6. Identify instructional situations that are suitable to large-group presentation and coordinate the scheduling and presentation process.

### *Guidance*

1. Initiate and coordinate planning for re-allocating home-room counselor-counselee assignments in relation to compatibility and need, information required, and counseling skill. Coordinate parent conferences through the determination of the purposes and needs of the conference and the assignment of the appropriate staff members to the conference.

2. Coordinate case conferences requiring the help of one or more of the special services staff (school psychologist, school physician, reading clinic, etc.) and follow through on case conference recommendations.

3. Be responsible for developing a formal social structure for the class unit. Keep communication channels open so that student desires, needs, and recommendations can be fed back to the teaching staff and school administration.

4. Analyze the peer group social structure in terms of important roles, statutes, and relationships and effect modifications when necessary to provide for individual needs, wider distribution of benefits, and support of the learning process.

The project inquiry centers around the effect of the coordinator role on the instructional process. We are gathering data on (a) the degree to which extensive information on individual differences and needs affects teaching method and course content, (b) the effect of intensive guidance on student learning and attitudes toward school, (c) the dimensions determining the predicted shift in teaching functions among members of the teaching team, (d) the attitude of students toward the large teacher-class unit, and (e) the frequency and extent of the changes in schedule and sub-groups made possible by the large unit of organization.

The planning and initiation of the project has created a high level of expectation among the members of the teaching team. They perceive it as a way of solving many of the problems related to increased individualization of instruction and anticipate a more satisfying and productive year. Results of the year's work are expected to help in the continuing application of the principle of differentiated teaching functions as a method of more effective utilization of the teaching staff.

M. **Better Staff Utilization in the  
Guidance Program in Springfield**

ROBERT D. FURRY

BACKGROUND OF THE STUDY

AT SPRINGFIELD High School, the counseling program is organized around four study centers, two for boys and two for girls, with a counselor for each group. Each counselor has the same group for four years. The counselors' offices are located in the study centers, thus providing pupils an excellent opportunity for interviews with their counselors. Teachers are assigned to monitor study centers in order to free counselors for conferences with students, faculty members, and parents.

The study centers in some ways constitute four smaller schools within the school, without the competitive element found in some situations such as this. The student feels his basic loyalty is to the school as a whole; school spirit is developed in the study centers.

Each counselor is responsible for 380 students. The literature in the field recommends that the load should not exceed 200 to 250 students per counselor. Our overload leaves little time for group guidance. The faculty as a whole did not take a very active or sympathetic part in the guidance program until home rooms were set up in the fall of 1957.

The home rooms were set up rather autocratically by the principal without a great deal of faculty consultation. The guidance program had been criticized and a quick solution was sought. Boys and girls were assigned to home rooms arbitrarily according to grade levels. Faculty members were assigned home rooms with approximately thirty students. Guidance material was prepared by the principal and counselors for use in the home rooms. The guidance rooms (home rooms) met for thirty-two minutes every other week.

After three or four meetings of the guidance rooms, the faculty members requested permission to work out the guidance topics for their own grade level. Permission was granted and four guidance committees were organized, one for each grade level.

Instructors found that the material prepared by their committees was much more suitable and at least two committees did an excellent job in preparing for the guidance room sessions. At the end of the year an attempt was made to evaluate the effectiveness of the guidance rooms. Some instructors were dissatisfied with the manner in which students had been divided among the guidance teachers. Subject centered teachers resented time taken from their classes for guidance room meetings. In May 1958 the faculty requested that the guidance program be evaluated

Robert D. Furry is Principal of the Springfield, Illinois, High School.

by a guidance specialist who would study our needs and recommend a better approach.

In the spring of 1958, the principal applied to the NASSP Commission for funds to secure the services of a guidance consultant. Our request was granted and the service of a consultant was secured in the summer of 1958. Our consultant, a university professor of education, has met with the faculty at Springfield High School and outlined the nature of the research.

#### OBJECTIVES OF THE PROGRAM

Essentially, it is our hope that a better guidance program can be established in our school through the cooperation of faculty, counselors, administration, and a guidance specialist. We need answers to the following questions:

1. What grouping of students in guidance rooms would be most effective?
2. Who should assume the responsibility for the material to be used by the guidance teacher?
3. How can we win better acceptance of a guidance program by faculty and students?
4. How can we enlist the support of parents and community for a better guidance program?
5. How can we use our staff effectively for group guidance without weakening our subject instructional program?
6. What additional guidance services are needed at S. H. S.?
7. How many counselors are needed at S. H. S. for individual counseling?

#### STEPS TO BE TAKEN IN THE STUDY

It is too soon to enumerate all the steps to be taken in the study, but the following have already gotten under way:

1. Bimonthly meetings with the university consultant, a specialist in guidance.
2. A faculty guidance committee to study the literature in the field and to report to the entire faculty.
3. Questionnaire for both faculty and students to evaluate the work of present counselors and indicate additional guidance services needed.
4. Lists made by the counselors of the services they are performing now.
5. A time study kept by counselors for one week of the varieties of services and the time spent on each.
6. In-service guidance training of the faculty in the philosophy justifying group guidance.

#### VALUE OF THE PROJECT

At the present time our guidance program provides:

1. A system of cumulative records for all students

2. Provision for individual counseling
3. Educational guidance for college careers
4. Certain tests to determine interests and aptitudes.

We hope to supplement the work of our four counselors through group guidance. We want a better orientation program. Students need more and better vocational and occupational information. Students need more social guidance. Other services which will lead to the maximum development of our students in all possible ways are our goal. We hope the specialist will guide teachers, administrators, and parents into an understanding and helpful cooperation for the better guidance of youth in our school.

#### N. Grouping of Ninth-Grade General Science Students at Wilmington

ROBERT JONES  
GEORGE MALLINSON  
FRANK MILLER  
WALTER PLUME

#### INTRODUCTION

THE teaching of general science has been a controversial area in many public high schools. In general, teachers are claimed to be deficient in the breadth of training in the physical and the biological sciences needed to teach this course adequately. Generally, a teacher has a wealth of training in physical science to the exclusion of biology or *vice versa*. A number of postulates have been made that such a pattern of training tends to emphasize one area of science to the exclusion of the other in the general science course. Further, it is believed that a teacher with extensive training in the physical sciences does not do a good job on the biological unit. The same is said of the teacher who has training of the other type.

There has also been a great deal of discussion about the fact that teachers of science need extra time in order to prepare for laboratory work, time which teachers in the social science and mathematics areas do not need. This study will attempt to seek evidence concerning these two problems.

#### DESIGN OF THE STUDY

The study involves approximately 125 students who are enrolled in ninth-grade general science during the school year. These students are

Robert Jones is Principal and George Mallinson, Frank Miller, and Walter Plume are teachers in the Wilmington-Lorenzo Community High School, Wilmington, Illinois.

distributed in classes of twenty-five, approximately as follows: one class, 8:30 - 9:30; two classes, 9:30 - 10:30; and two classes, 10:30 - 11:30.

The two classes of general science that are taught at 9:30 in the morning are combined into one large section. The one class taught at 8:30 and the two at 10:30 are taught under the present circumstances by the respective instructors. These three classes of approximately twenty-five each represent the control. All students have been administered the *SRA High School Placement Test* and will receive the *Iowa Silent Reading Test*, the *Social Background Test*, and the *SRA Primary Mental Abilities Test*. Any differences that may appear between the groups with respect to the characteristics measured by these tests will be compensated for in the final statistical analysis utilizing the technique of analysis of variants and covariants.

The following technique is used with the experimental group. The program and materials are the same for the experimental group as for the control group. An effort is made to develop the course so that one half of the experiences is in the biology area and one half in the physical science area. However, with the experimental group, the biology area is taught by one instructor and the physical science area is taught by another instructor.

Because the same instructor is teaching portions of all sections, the problem of variation in teaching of the subject matter is minimized. During the course of the study, the various groups are kept reasonably parallel insofar as such a procedure is educationally sound. The control groups meet for three days a week for one week for the general sessions and four days a week for the next week for general sessions. For the three days in each two weeks, they meet in smaller groups with the instructors for laboratory work, for question and answer periods, and for work with newspaper materials and supplementation.

#### PROBLEMS TO BE STUDIED

It may be noted that two factors will be tested and can be isolated in the final analysis: (1) the extent to which there may be increments of achievements when areas are taught in general science by teachers whose backgrounds are extensive in such areas; (2) the extent to which combinations of classes may be utilized, thus relieving the science instructors from work for periods of preparation.

This study does not, therefore, demand less total teacher-contact time; rather, the reallocation of time in a manner that may be more efficient. The devices to be used in measuring the final achievements of these students are yet to be determined. There are a number of excellent tests now in the process of being standardized. These matters may be settled within the next month or so.



O. Utilizing Professional Ability During a Summer  
Month Contributes to an Improved School at Lakeview

DAVID W. BEGGS, III

**D**URING the summer of 1958, a workshop was instituted at Lakeview High School to work on four broad problems: (1) to determine whether summer workshops will benefit instruction during the following school year; (2) to develop the over-all curricular plans for an Accelerated Program (a program for above-average and gifted students); (3) to work out ways of better utilizing professional teaching time; and (4) to discover ways of bringing about general improvement in the school's educational program by seriously evaluating existing policies. Final judgment of this workshop cannot be made without evaluating the outcome and influences of the workshop on the class instruction at the conclusion of the following school year. There are, however, some evaluation statements which can be made after a summer's experience with the workshop.

THE SUMMER WORKSHOP

The degree to which the students will benefit from this workshop cannot be determined now, but we believe that engaging teachers in professional activity during the "vacation" months will contribute to the quality of teaching. This belief is based on the results of the summer workshop. During this workshop, the content of courses was studied. Some topics previously taught will be omitted from some courses because these topics were found to be inappropriate, repetitious, or unrealistic for the learner at his particular level.

An example of this is a revision made in the seventh-grade arithmetic. Prior to this consideration, seventh-grade students studied banking practices and learned how to use personal checks. This was taught because the textbook used (one of the best in the field, incidentally) has a unit on checks and checking accounts. After analyzing the unit it was felt that seventh-grade students do not have an interest or a need for this instruction. Instead, seventh-grade arithmetic students need to concentrate on the mechanical skills of arithmetic reasoning and on learning to understand word problems.

Historically, it was found that the unit on checks and checking accounts was put in seventh and eighth grade because these were the terminal years of many students' education in an early generation. Text publishers and teachers have kept the tradition of this instruction even after the need for this instruction at this level has passed.

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David W. Beggs, III, is Assistant Superintendent in charge of Secondary Education, Lakeview Community Unit Schools, Decatur, Illinois.

Units of study in English have been assigned to each grade level. The purpose of this is not to standardize instruction, but rather to shape a developmental program which will assure the student that he will cover the entire field in the course of his junior-senior high-school English instruction. A developmental test of English skills was worked out to chart the students' progress.

In the social sciences care has been made to relate the depth of the concepts taught to the students' perceptive abilities. It is probably unwise for an eleventh-grade student to study foreign policy, for instance, without a firm background in economic and political geography and world history.

In science it was decided that students need to study more pure science; they need to do more experiments. Previously too much science instruction has been the study of the lives of the scientists. It was also determined that advanced science courses should be offered. Therefore, advanced biology will be offered in the 1958-59 school year. Students who obtained a high level of accomplishment in the seventh and eighth grades will be advised to omit ninth-grade general science and go directly into biology classes. Such students then take advanced courses in biology, physics, chemistry, meteorology, and physiography in their other high-school years.

The common learnings program is being re-evaluated, and an attempt is being made to concentrate on wholesome attitude development. The subject matter in this course cuts across subject matter lines and attempts to strengthen the basic communication skills of speaking, listening, and writing.

The emphasis on history courses is being shifted from the study of isolated ancient civilizations to the cultural and socio-political study of the past in relation to our present civilization.

Basically these questions were asked about each unit in every course:

1. Are the skills being developed and the concepts being taught on the level of the learner?
2. Is the amount of class time given to any topic equal to the topic's worth for the student in the adult world of 1978?
3. Is the instruction developmental? That is, does the instruction naturally and logically follow from what was previously learned and what will follow in other courses?
4. What are the best methods of instructing students for each unit of every course?

This workshop pointed out that teachers, familiar with the needs of the students in their schools, can arrive at solutions for their own school's problems.

### PLANS FOR THE ACCELERATED PROGRAM

First, it was decided the community should be kept fully informed as to what this program is and how it will operate. The public's knowledge of the goals of this program will prevent, we believe, a misunderstanding of the program. The Lay Advisory Curriculum Council had its first meeting this summer. This was very successful because there was a frank exchange of ideas about the educational needs in this district.

Second, the courses which are to be accelerated were reviewed and finally determined. These courses are English, all levels; mathematics on the seventh- and eighth-grade levels, algebra, and plane geometry; science, on seventh-, eighth; and ninth-grade levels; history on seventh- and eighth-grades levels and world history; and advanced courses on the senior level.

Third, a general grading policy was determined. All students in accelerated courses must be "A" or "B" students or they will be rescheduled in regular classes. Students in regular classes with "A" accomplishment will be encouraged to enroll in accelerated classes.

Fourth, homework in accelerated classes will be carefully assigned so as to avoid over-burdening students and to allow these students to do independent products.

### CONSERVING PROFESSIONAL TEACHER'S TIME

After lengthy discussion plans were worked out to employ these devices during the school year:

1. Utilize senior high-school future teachers as assistants in junior high-school classes in physical education.

2. Give the student council the responsibility for arranging the noon-hour recreation program.

3. Schedule two sections of one course at the same time. On days when the instruction should be duplicated, both sections will meet with one teacher. This will allow the second teacher more time for grading papers and preparing lectures.

4. Produce and distribute an audio-visual list so teachers will not have difficulty in locating helpful films and filmstrips.

5. Assign competent and interested students to the faculty as student assistants. This should aid the teacher and, at the same time, encourage students to investigate teaching as a career.

6. Establish school-wide test days so teachers teaching the same subject can give all exams at one time. This avoids wasting the teachers' time in administering one test as many as five times. Also, this frees the teacher for grading papers during most of the time on test days.

7. Rearrange the library-study hall so that there is a definite division between the two.

8. Set up the Science Research Associates Reading Accelerators so that students can use them themselves.

9. Carefully evaluate class assignments so that the number of classes can be kept as low as possible with no more than thirty students ever allowed in any class. (The average class size at Lakeview is twenty.)

10. Devote more faculty time to departmental meetings and less to general faculty meetings.

11. Establish the policy that faculty meetings are decision making sessions and not for announcements which can be made in writing the daily bulletins.

12. Remap the plan for recording grades and distributing report cards to cut down the clerical time spent on this operation. Various other ideas were presented which will require future investigation.

#### SUMMARY

The summer workshop was a productive, professional experience for the teachers involved. Its success is due entirely to their talent and energy.

During a busy school year, it is impossible to do the kind of planning which was done in the workshop. If there was one glaring gap in this venture, it was the limited number of teachers who were involved. (This was due to the limited amount of funds available.) Certainly the quality of education at Lakeview will be improved by this activity.



South Bend (Indiana) guidance teachers prepare tapes for use in home rooms.

## **Others Also Study Staff Utilization: Effecting Better Use of Educational Manpower and Resources**

BENNIE CARMICHAEL

### INTRODUCTION

**D**URING the past year, George Peabody College for Teachers, with support from The Fund for the Advancement of Education, has launched a new and exciting research and development program in the Southern Region. Representatives of six school systems and the college planned and conducted research and demonstration projects under field conditions, aimed at more effective utilization of the teaching staff. The program reflects a common concern for maintaining and improving the quality of teaching in the face of rising enrollments.

In the process of conducting the program, representatives from the college and the participating school systems were brought together in a close working relationship. This relationship proved to be mutually profitable. For Peabody faculty members it provided a fresh look at the stubborn realities of operating public schools; for public school administrators it provided an opportunity to re-examine established procedures.

The fruits of the first year, briefly summarized in this report, testify persuasively in favor of this type of cooperative effort. Credit is due the representatives of the participating public school systems and to College faculty members who participated directly in the Program.

In a very real sense this has been a college-wide project, involving broad faculty participation. The Program was developed under the leadership of Dr. Erick L. Lindman, Chairman of the Department of Education, and special credit is due Dr. Bennie Carmichael who has been responsible for coordinating the entire Program.—HENRY H. HILL, *President*

Bennie Carmichael is Professor of Education and Coordinator of the Peabody Public School Cooperative Program, George Peabody College for Teachers, Nashville, Tennessee. The Commission has a policy of bringing other Studies to the attention of our readers. The Peabody Study should be of interest to all secondary-school administrators. It is for these reasons that this Study is being included with this report.

### THE PEABODY-PUBLIC SCHOOL COOPERATIVE PROGRAM

A year ago Peabody College and six public school systems initiated, with financial support from The Fund for the Advancement of Education, a cooperative research and development program, now known as the Peabody Public School Cooperative Program. Through this joint effort, ways were sought to improve education, giving special consideration to better utilization of teaching personnel and other available resources. The experimentation has been concentrated in rural and suburban county school systems in the South where critical shortages in educational manpower and resources already exist and at George Peabody College where the training of personnel for the implementation of new ideas is emphasized.

In organizing the program, effort was made to avoid the separateness which often characterizes programs administered by colleges and universities but financed from special grants. The director of the Program, under the immediate supervision of the President, also serves as chairman of the Department of Education, and the entire faculty is represented through a faculty advisory committee.

An essential aspect of the program is the close working relationship which has been established between Peabody College and the public school systems. In developing the Program, faculty members and local school representatives have assumed joint responsibility for initiating and directing research projects.

### EXPERIMENTATION AND RESEARCH

During the first year of the Program, eight separate research studies were initiated—all designed to improve the quality of instruction by affecting better use of teaching resources. Through the courtesy of two school systems, Jefferson County, Kentucky, and Caddo Parish, Louisiana, two other projects, one in educational television and the other in teaching gifted students, were followed and studied closely by program personnel.

Six of the eight experiments were conducted jointly by Peabody College through the Peabody-Public School Cooperative Program and four school systems in the Southern Region. These six studies dealt with (1) making better use of professional personnel, (2) utilizing the summer months to provide special instruction to superior students in science and mathematics, (3) using non-professional personnel to assist teachers with clerical and routine duties, and (4) making use of new instructional media.

Two studies were conducted separately by Peabody College as a part of its teacher education program. One involved a team approach to college teaching combined with special training for future college teachers; the other involved Peabody professors in experimental teaching by television and the training of teachers to use the television medium. Brief descriptions of these projects, as they are related to

improving instructional and administrative practices, are included in this report.

### *New Staffing Patterns for Public Schools*

In Davidson County, Tennessee, instructional secretaries were used to improve the effectiveness of classroom teachers by relieving them of clerical and routine secretarial duties. This was achieved by recruiting capable married women with secretarial ability who were willing to work a portion of the school day, but were not available on a full-time basis.

One secretary was assigned to six teachers to perform a set of prescribed secretarial and clerical tasks usually performed by the teacher. The secretaries were not assistant teachers or classroom helpers. The experiment was designed to test the hypothesis that *teachers can extend their creative teaching talents to pupils and markedly improve the effectiveness of their teaching when they are freed from the many time-consuming, routine clerical and secretarial tasks which they now perform—tasks which someone must perform for each classroom in every well-organized school.* Also, the experiment sought to test the feasibility of tapping a new source of personnel to assist in manning the public schools—married women with training and experience in secretarial work who do not wish to work a full day, but are available and willing to work regularly on a four-hour-a-day, five-day-a-week basis.

In one typical twenty-day period, these six secretaries, working four hours per day, completed work on 1,028 job assignments. These job assignments completed by the secretaries included the handling of some 37,000 pieces of material. Included in these materials were 7,833 tests and papers scored by secretaries. One third of the time spent by secretaries was devoted to the duplication of teacher-prepared materials. Other major services provided by the instructional secretaries were recording data in permanent records, keeping records for teachers, securing instructional supplies and materials for teachers, and writing letters and making appointments for conferences between teachers and parents.

Teachers were high in their praise of this service for improving instruction. Thirty-two teachers reported 297 changes in their teaching practices. Categories of change that seemed to be most affected by the introduction of secretarial help were those related to individualization of instruction, home-school relations, increased use of audio-visual aids, and testing and evaluation. Teachers indicated that this service would compensate for an increased load of four pupils in class sizes ranging from twenty-five to forty pupils.

### *Superior Teachers for Instructional Leaders*

A pilot program was initiated in the Skyland Elementary School of DeKalb County, Georgia, at the beginning of the 1957-58 school



year, making use of specially designated staff members as instructional leaders and coordinators. The emphasis in the program was to improve the quality of teaching through more effective utilization of the competencies of outstanding teachers.

Three teachers were chosen for curriculum and teaching coordination and leadership. One worked with first- and second-grade teachers, one with third- and fourth-grade, and one with fifth-, sixth-, seventh-, and eighth-grade teachers. The coordinating teachers carried a full teaching load and devoted five extra hours per week to helping the other teachers. The work of these coordinators amounted to a kind of limited supervision. For this additional time and service, each coordinating teacher's salary was increased by one eighth of the base salary.

Teachers were enthusiastic in their belief that this leadership was effective in improving instruction in the Skyland School. The program and work of these teachers gained prestige for the school, both in the eyes of the administration and the patrons of the school. This use of teacher's talents provided for the sharing and implementation of many new ideas; served for the effective orientation of new teachers; helped teachers in the use of many community resources; and helped the teachers secure and use many new instructional supplies and materials. Administrative personnel at the school and county level were confident that the leadership of these able teachers had been responsible for effecting a closer working relationship among staff members; had promoted more cooperative planning; had led to a more professional approach to the solution of problems; had increased efficiency in teaching; and had increased the use of various types of testing materials and developed a higher general morale among teachers.

#### *Special High-School Summer Sessions for Superior Students*

Hillsboro High School, in the western part of Davidson County, Tennessee, and Madison High School, in the eastern part of the County, served as attendance centers where special high-school summer sessions were operated during the summer of 1958. Outstanding mathematics and science teachers in the school system were selected to teach in the summer sessions, and invitations were extended to superior students to attend. Prerequisites for student eligibility included: (1) completion of the junior year, (2) completion of three years of high-school mathematics and two years of science, (3) grades of "B" or better in high-school mathematics and science, and (4) recommendations by teachers and principals. Instruction included topics in mathematics and science not included in the present high-school curriculum.

Although the program was given limited publicity, forty students enrolled in the mathematics course, twenty-six students in the physics course, and thirty-three students in the chemistry course. Each class met two hours a day for eight weeks. In mathematics, instruction attempted to develop the notions of mathematical functions, limits, the

derivative, and the integral. Students who enrolled in physics received instruction in the physics of electricity—a topic often given inadequate treatment in the regular high-school physics course. Since the students had already taken the regular high-school chemistry course, their summer work emphasized laboratory exercises, a theoretical approach to the structure of the atom, the periodic table, and similar topics.

Experience in this pilot project indicated that many advantages may be derived from summer high-school programs of this type. They are practical and can be implemented promptly; they give able secondary-school teachers an opportunity to *earn* extra compensation as *teachers* and make a greater use of their talents; they provide special instruction for gifted students without separating them from their school and classmates during the school year; they use the time of young people which might otherwise be wasted; they use laboratory facilities which would otherwise be idle; they provide additional instruction in special subjects without decreasing instruction in other subjects; and they provide an excellent opportunity to develop and use new curricula. Students trained in the programs increase their chances of being admitted to top-flight college programs of their interest, of securing scholarships, of gaining advanced standing in college curricula; and they receive additional, superior instruction in their fields of interest.

#### *Effecting and Improving the Use of Teaching Materials and Aids*

*Special teaching films.* In three school systems in Tennessee—Robertson County, Clarksville City, and Davidson County—the EBF-White *Introductory Physics on Film* series is being used over a two-year period to discover operational difficulties involved and to test its effectiveness under field conditions. In Robertson County, the films were used at a nominal rate of three per week, by teachers not trained in physics, to demonstrate physical principles and to provide vicarious experiences. The hypothesis under test in this program was that “experienced teachers with limited preparation in physics can achieve satisfactory results through the systematic use of selected films from the series.” In Davidson County, the films were used, but not as extensively, to improve instruction by the use of selected films to present selected topics.

In Clarksville, the actual use of the films does not begin until the second year of the experiment, but, in all three cases, measures of a student's knowledge of physics are based upon: (1) a knowledge of the facts and principles of physics, (2) the ability to apply scientific knowledge in the solution of problems, and (3) the development of science-related interests. By careful planning, it has been hoped that teachers can successfully extend experiences, although limited by the availability of equipment, through film without sacrificing the quantitative aspects of physics.

Test results indicated that while the film users in Robertson County did not reach desired levels of achievement in science and physics, their gain in achievement was significant. Particularly was this the case in the application of scientific knowledge. The fact that the variance among film users was greater than that among the nonfilm users suggests that the films did not have the effect of putting every individual in the same mold. On the other hand, the acquisition of subject matter vocabulary, information, and concepts was not favored for the film group as a whole. A detailed study of the score distribution, coupled with knowledge of intelligence test scores and the scholastic expectations in the communities, suggests that the films may be more effective with students capable of some independent study.

On the basis of test results in Davidson County, the use of films did not seem to be a conclusive factor in determining instructional gains in either physics subject matter or the application of scientific principles. No significant difference in mean gain scores in physics or science was obtained between film users in the county and nonfilm users in the county and the Middle Tennessee area. Comparisons were made in both groups between students taught by experienced and inexperienced physics teachers.

In a rural area, characterized by small high schools, the use of the film series may make possible the offering of physics. The films illustrate good demonstration-lecture techniques for the teaching of physics and help teachers clarify physical principles. However, unless the attitude of the "text-bound" teacher is reoriented, the use of film in relation to the text becomes a problem. The films presuppose a background in mathematics, vocabulary, and abstract reasoning for which general mathematics (or first-year algebra), general science, and average intelligence are hardly adequate prerequisites. Based on first-year experience, the claim can be made that the use of film made possible the offering of a mediocre physics course but further suggests, when compared with other physics instruction, that there is need for general strengthening of regular physics teaching and more careful study of other factors contributing to the effectiveness of physics teaching.

*Educational television.* During the 1957-58 academic year, Peabody College established a Television Teaching Center served by a closed circuit cable distribution system. While many purposes were identified for its use, the two central goals sought through this facility were those of investigating its instructional value in public schools and in teacher education.

The first step in the study and planning for utilization of educational television was the survey of the status and development of educational television in the United States. This report entitled "Educational Television: A Background Report for the Peabody-Public School Cooperative Program," is available from the Program office. It

gives special consideration to: (1) the number and nature of closed-circuit and open-circuit projects in the United States, (2) a summary of research findings, and (3) general implications for the Peabody project.

A faculty committee has given general direction to the establishment of the Center and to promoting and coordinating its educational uses. In preparation for effective contribution to the Peabody Program, each member of the committee visited one or more instructional television programs already in operation. Through the courtesy of the Jefferson County, Kentucky, School System, program personnel were permitted to study on a continuing basis the experience of planning, activating, and using the television medium for classroom teaching in public schools.

The installation and checking-out of equipment was completed early in the spring quarter, and during the quarter professors explored the use of television to teach undergraduate classes in mathematics, business education, and education. This teaching was primarily preparation for summer quarter teaching.

During the summer quarter, three major kinds of activities were carried on at the Television Teaching Center. First, a series of classes was taught a week at a time by professors and teachers from seven different departments and the Demonstration School. Second, a series of three workshops was conducted. The third was a kind of incidental use of the television facility in connection with several courses, mainly in education, in which students took leadership responsibilities for preparing and presenting special programs and lessons.

#### *Team Approaches to College Teaching*

Two programs were conducted at George Peabody College during the 1957-58 academic year seeking to enrich training experiences of graduate assistants and increase the productivity and effectiveness of regular professors. The projects were designed and directed to develop:

1. A procedure which would assure a better utilization of regular staff resources and specialties to the benefit of a greater number of students.
2. A structure which would be sufficiently adaptable to lend itself to an expanding freshman load without diminution in the quality of instruction.
3. A format for an instructional program designed for the training of instructors of college freshman courses.

In the English Department, five regular professors teamed with three student instructors:

1. To teach eight classes of freshman English students, of approximately twenty-five students each, meeting for three one-hour classes and one two-hour skills laboratory weekly.
2. To conduct thirty demonstration classes at intervals throughout the year with units of students ranging from seventy-five to one hundred with members of the English Communication staff participating where their interest and specialty best qualified them.

3. To participate in a two-hour seminar weekly—a corollary to the other experience of the student instructors—intended to review the structure, materials, methodology, objective, and philosophy of the freshman English Communication course and help them prepare a manual for teaching freshman English.

Students involved in the program showed comparable gains in achievement when compared with achievement in conventional teaching situations. Most heartening was the response of the student instructors to their training, and regular professors recognized the program's possibilities for the students, the student instructors, and themselves. By the end of the year their appraisals offered convincing proof that it was a better program in many ways.

In the mathematics department, two sections of freshman mathematics were taught each quarter by one regular professor and one graduate assistant. In the fall quarter, the graduate assistant and regular professor each taught a section, but switched sections at the conclusion of each unit and spent a few days reviewing the unit just completed by the other. In the winter quarter, each took one section for the entire quarter and taught it in the usual way. In the spring quarter, they alternated again, but this time one person taught both sections. One presented the theory in a given unit in normal lecture, and then the other covered the same material in a laboratory-work session type situation.

There was no discernable difference in results between the fall and winter quarter, but the spring quarter was appreciably better than either of the other two. In spite of inconclusive results, insofar as student achievement is concerned, there does seem to be merit in any plan which enables the faculty member in charge to keep in close touch with the work of an assistant. It improves the usefulness of the regular professor and enriches the training of the assistant.

Experience gained in this pilot project has led to the planning of a similar program for this school year with the regular professor presenting the theory in a manner similar to the method employed in the spring quarter, except that the presentation is *via* closed circuit television, and the follow-up, laboratory experience is supervised by student instructors.

#### EFFECTING CHANGE

Cooperative research by institutions of higher education and public school systems holds much promise for finding and effecting solutions to many pressing school problems. Field trials and demonstrations, followed by quick effective dissemination of information, can speed up the process of educational improvement. During the first year of the Peabody-Public School Cooperative Program venture, effective working relationships have been established with cooperating school systems, and agreements and arrangements for sharing research findings with some fifty other school systems have been established.

Considerable publicity has been given to the research and field demonstrations being conducted as a part of the Peabody-Public School Cooperative Program. Materials and consultative services have been provided numerous school systems wishing to explore these possible solutions to pressing problems, and additional materials are now available. In response to a brief reference in one state department publication to the instructional secretary project, fifteen requests were received from educators in the state for additional information on the project.

The research bulletins listed below present more detailed information on each of the studies described in this report and may be obtained from Dr. Bennie Carmichael, Coordinator, Peabody-Public School Cooperative Program, George Peabody College, Nashville 5, Tennessee.

Research Bulletin Number 1—*Secretarial Help for Classroom Teachers*

Research Bulletin Number 2—*Using Superior Teachers for Instructional Leaders*

Research Bulletin Number 3—*The Use of Physics Films in Davidson County, Tennessee*

Research Bulletin Number 5—*Team Approaches to College Teaching*

Research Bulletin Number 6—*Specialized High-School Summer Sessions*

The First Annual Report on George Peabody College Educational Television—Teacher Education and Educational TV

The findings of this first year of experimentation and research reveal important implications for reorganization, finance, and administration of education from the elementary school through the college level. The success of the Program will be measured, in the final analysis, by the improvements that are effected in the quality of education. The pilot research projects of the Peabody-Public School Cooperative Program have been developed with these goals in mind; they are being extended and carefully evaluated during this second year so that these objectives may be fully realized.



Superintendent Dr. Norman E. Watson of the Glenbrook High School conducting a daily in-service class for the nine beginning teachers in the internship program at Glenbrook.

## ***Part VI***

## **Conclusion**



## Summary and Some Findings

J. LLOYD TRUMP

THIS issue of THE BULLETIN presents a statement by Dr. Lloyd S. Michael, Principal, Evanston Township High School, Evanston, Illinois and Chairman of the Commission indicating purposes of the Commission followed by fourteen chapters reporting completion of two studies, follow-up of two studies completed one year ago, seven studies continuing last year and this, and three studies, one a state-wide effort involving fifteen school systems being started this year, one chapter reporting on a research and development program in the South being conducted by the George Peabody College for Teachers.

### SUMMARY

The studies reported in this volume vary widely from those involving the use of material aids to instruction and others in which various types of sub-professional and clerical assistants were used, to those in which changes in scheduling and other procedures involved fundamental re-deployments of staff, students, curriculum methods and content, and use of instructional facilities. A wide variety of approaches to improved staff utilization are represented in the reported experiments. Some of the studies are broader in scope and more fundamental in their attacks upon traditional practices than others; all represent creative efforts on the part of many persons involved.

Most of the study describes some things that worked and some that didn't, some successes and some failures; that is the essence of experimentation. Readers will have to use their own professional judgment in deciding whether the shortcomings in the studies were necessary results or whether they might have occurred because of the manner in which the studies were conducted. Similarly readers will have to decide what adaptations might be made in order to make the approaches more successful should they be attempted in their own schools.

### SOME FINDINGS

Reading foregoing chapters of this volume reveals a substantial number of conclusions reported at the end of each chapter. The following

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list pulls together a number of these conclusions. The order has no significance either in importance or frequency with which the various conclusions were reported in the studies. The list presented is conservative in that it would be possible to present a much longer list of tentative findings. The following findings apparently are justified on the basis of the reports:

Students can learn when taught by means of television, electronic tape, overhead projector, and films.

Size of class in itself has little relationship to the achievement of students.

Students can learn materials as well in large groups of 70, 100, or even 1100, as in traditional classes of 25-30.

Teachers believe a number of advantages accrue to themselves and students when teachers work together as teams rather than separately as individuals.

Small schools as well as large can benefit from the aid of university consultants.

Promising students who are not going to college for financial reasons can become potential teachers when scholarships are provided.

Carefully selected and trained non-certificated persons can effectively perform a number of sub-professional teaching services which now require time and energy of certificated personnel.

Students can profitably make use of laboratory facilities outside of regular class time, including Saturdays, even though the laboratories are supervised by trained, though not certificated, personnel.

A schedule of classes that provides flexibility in meeting days and length of periods in relation to purposes can be constructed.

New buildings can be planned and existing ones remodeled to facilitate flexibility in class size in relation to purposes and content of instruction.

Teachers engaged in staff utilization studies reflect gains in morale. Individual differences among teachers in interests and competencies can be recognized in assignments to specific teaching responsibilities.

Personnel resources exist in communities to supplement the services of the professional staff.

Stimulating widespread action research is possible in a wide variety of schools.

Curricular organization is related to staff utilization.

Teachers can readily and effectively learn the use of electronic and mechanical aids to instruction with a minimum of training by university consultants.

The provision of sub-professional assistants for appropriate phases of instruction may actually simplify the scheduling of students, make possible better services to students, and be financially feasible.

Small schools as well as large can profit from staff utilization studies.

#### MORE STAFF UTILIZATION EXPERIMENT IS NEEDED

Analysis of the experimental studies reported in this volume indicates a broad experimental approach. On the other hand, an examination of the outline provided on the next several pages indicates several types of additional studies that should be undertaken. Even though

similar studies may have been conducted elsewhere and the results and data point very clearly to desirable changes, the effects upon local practices are likely to be more pronounced if studies are made in the local settings.

The following outline, presented in the January 1958 BULLETIN, is repeated here for ready reference:

1. *Utilization of teaching assistants working under the supervision of, or in cooperation with, professionally certificated, experienced, competent teachers*

1.1 Non-certificated adults

- 1.11 Provide clerical help
- 1.12 Provide custodial help
- 1.13 Serve as laboratory assistants
- 1.14 Teach certain topics or phases of units or courses
- 1.15 Assist in preparing and distributing materials
- 1.16 Assist in reading and correcting materials
- 1.17 Assist in review and testing
- 1.18 Supervise playgrounds, study halls, etc.
- 1.19 Assume specific duties in connection with extraclass activities

1.2 College and university students

- 1.21 Same as under 1.1

1.3 High-school students

- 1.31 Same as under 1.1

1.4 Certificated, professionally trained teachers

- 1.41 Work with students with behavioral problems
- 1.42 Work with students needing remedial instruction
- 1.43 Work with specially gifted students
- 1.44 Teach certain topics or phases of units or courses
- 1.45 Assist in preparation of materials
- 1.46 Assist in evaluation

2. *Reorganization of administrative patterns*

1.1 School year

- 2.11 Operate on four 12-week quarters basis
- 2.12 Operate two 18-week semesters with fully organized and synchronized 9-week summer session
- 2.13 Organize to permit concentrated work in some fields

2.2 School day

- 2.21 Eliminate organized and/or staff-supervised study halls
- 2.22 Schedule some classes 5, others 4, 3, 2, or 1 day per week on the basis of purposes and need
- 2.23 Change length of class periods
- 2.24 Change number of periods in day that students are scheduled for classes and activities

2.3 Pupil programs

- 2.31 Plan in relation to different levels of maturity, interests, and achievement

- 2.32 See 2.2 and 3
- 2.4 Class size
  - 2.41 Change in relation to purposes and methods of instruction
  - 2.42 Select methods of instruction and materials best suited for groups of 5, 10, 20, 30, 100, 300, *etc.*
  - 2.43 Provide flexibility in schedule arrangements to facilitate different sized classes at appropriate times
- 2.5 Credit arrangements
  - 2.51 Calculate credit on achievement of purposes rather than on time spent, as in present Carnegie Unit
  - 2.52 Make flexible to provide for needs as expressed under 2.2 and 2.3
- 2.6 Teacher programs and assignments
  - 2.61 Plan work loads in relation to assistance (personnel and material) provided
  - 2.62 Plan work loads in relation to complexity and types of tasks assigned
  - 2.63 Recognize better time relationships in planning, preparing materials, teaching groups of different sizes, evaluating, *etc.*
- 2.7 Supervisory relationships
  - 2.71 Use carefully selected, competent career teachers who would devote part-time to working with less-experienced colleagues in planning, preparing materials, evaluating, managing classes, and other phases of instruction.
  - 2.711 Work with 6-10 teachers in various departments, perhaps at a grade level
  - 2.712 Assume responsibility also for some teaching, perhaps an average of two hours per day, with large groups or for special purposes
  - 2.72 Develop policies so that supervising teacher would work under supervision of principals and supervisors of instruction
  - 2.73 Develop for supervising teachers special pre-service and in-service training in special programs developed by graduate schools of education
- 2.8 Salary policies
  - 2.81 Base compensation upon responsibilities as well as training and experience
  - 2.82 Provide stimulation toward making teaching a career profession
  - 2.83 Establish policies for rewarding meritorious services
- 2.9 Certification and other legal standards
  - 2.91 Relate to job to be done as well as training
  - 2.92 Permit payment to various types of teacher assistants
- 3. *Recognition of student responsibilities for learning*
  - 3.1 Evolve freedom from institutional mothering

- 3.2 Establish policies showing relation of staff to independent student work
  - 3.21 Indicate respective roles of teacher and student when classes of different sizes meet a variety of number of minutes per week
  - 3.22 Indicate relative roles of teacher and student when different methods of instruction are followed
- 3.3 Extend participation in the management of school affairs
- 3.4 Increase responsibilities for control in study halls, laboratories, libraries, etc.
- 3.5 See 2.31
- 4. *Analysis of teacher roles and teacher competencies*
  - 4. Define changing roles of teacher in relation to students in such teaching functions as motivating; explaining; pointing to materials; demonstrating; planning methods of learning; organizing groups; listening; viewing; using mechanical and electronic aids; developing attitudes, appreciation, skills, and understandings; helping individuals and groups achieve social and psychological adjustment; reading papers; evaluating, recording, and reporting pupil progress; working with parents and other lay persons; working with professional colleagues; and disseminating and adding to educational science
  - 4.2 Determine individual differences among teachers in interest and ability to perform responsibilities listed under 4.1
  - 4.3 Evaluate teacher effectiveness in various roles under 4.1
    - 4.31 Select kinds of evidence, methods of collecting and interpreting data
    - 4.32 Develop organization and techniques for implementing findings
  - 4.4 Effects of rewarding superior teachers
    - 4.41 Financial and professional gains
    - 4.42 Relations with professional colleagues
    - 4.43 Relations with students
    - 4.44 Relations with parents and other lay citizens
    - 4.45 Effects upon young people considering teaching as a possible career
  - 4.5 Effects of electronic and mechanical aids in changing the role of the teacher
  - 4.6 Effects upon social, emotional, and physical adjustment of teachers when roles are changed
- 5. *Utilization of material aids to instruction*
  - 5.1 Television: open and closed circuit
  - 5.2 Films and slides
  - 5.3 Radio
  - 5.4 Recordings
  - 5.5 Pictures, charts, mock-ups, and other visual aids

- 5.6 Other electronic and mechanical aids to learning and appraisal
- 5.7 Laboratories, workshops, and libraries
- 5.8 Community resources
- 6. *Utilization of physical plant in improving staff functioning*
  - 6.1 Determine various sizes of instructional areas needed
  - 6.2 Analyze location relationships of instruction areas
  - 6.3 Consider influences of construction materials used in physical plant
  - 6.4 Study physical plant influences upon departmentalization, student habit and attitude development, energy output of teachers, etc.
  - 6.5 Develop plans for assuring maximum flexibility for future needs
- 7. *Improved staff utilization through basic curriculum revision*
  - 7.1 Analyze unit method, assign-study-recite, and other methods of instruction
  - 7.11 Use teacher-pupil planning to develop individual responsibility on part of students
  - 7.12 Develop consultant role of teacher
  - 7.13 Select best techniques for given purposes
  - 7.14 Plan effective techniques for large classes
  - 7.15 Use buzz sessions and other involvement techniques to serve individual needs in large classes
  - 7.16 Develop individual and group self-appraisal techniques
  - 7.2 Change amounts and types of laboratory and comparable work
  - 7.3 Consider effects of patterns of required and elective topics, units, and courses
  - 7.4 Plan different sequences of course offerings
  - 7.5 Use correspondence courses and independent study
  - 7.6 Develop increased departmental co-operation to minimize duplication
  - 7.7 Develop institutional co-operation to provide specialized courses and/or economy of instruction
  - 7.8 Study relationships between content, methods, and class size
- 8. *Utilization of effective techniques for interesting increased numbers of able young people in becoming teachers*
  - 8.1 Utilize the proposed professional role of the teacher
    - 8.11 Study influence of the professional, career-minded, successful teacher whose competences are being effectively utilized.
    - 8.12 Analyze role of teacher-assistant experience as a factor—see 1.1, 1.2, and 1.3
    - 8.13 Note attitudes created by using latest electronic and mechanical aids
  - 8.2 Face the total manpower problem
    - 8.21 Provide information to students, parents and other lay citizens, and teachers

- 8.22 Develop program for helping students and their parents make intelligent and reasonable choices
- 8.3 Develop an index of occupational attractiveness designed to identify the relative importance of various factors which will influence people to enter teaching in increasing numbers
- 8.4 Develop techniques to help local schools obtain facts concerning the number of pupils in the top one fourth of their classes who do not graduate from high school and/or attend college
  - 8.41 Diagnose why the situation exists
  - 8.42 Take whatever steps appear to be necessary to correct the situation so this source of manpower is not overlooked
- 8.5 Study methods in local schools to locate prospective teachers, trained and untrained, in the numbers needed (*see* 8.12)
- 8.6 Collect, refine, collate, interpret, and publish data regarding the manpower needs in teaching
  - 8.61 Project in terms of population expectations
  - 8.62 Consider extent to which the use of certain minority groups would relieve parts of the manpower situation
- 8.7 Help reduce the number of persons who leave or fail to enter the teaching profession by providing better initial employment practices, higher salary incentives, better orientation, more adequate and up-to-date supplies and equipment, and improved relationships with students, professional colleagues, and parents and other lay citizens
- 8.8 Take further steps to professionalize teaching, including working toward accepting the principle of increasing the salary when responsibilities are increased
- 8.9 Take steps to improve predictions of persistence in the profession
- 9. *Analysis of contributions and relationships of various methods of staff utilization in a coordinated program*
  - 9.1 Use as many of the techniques listed under 1 to 8 inclusive in a given local situation and determine effects upon quality of instruction, teacher-pupil ratios, costs, *etc.*
  - 9.2 Develop criteria for deciding which techniques are to be used
  - 9.3 Make priority decisions regarding which techniques are to be introduced first

*Should we undertake some studies?*

Which of the studies bear on problems that professional and lay persons in our community believe are most pressing?

How can we develop the point of view that experimentation to solve problems is different from merely trying to prove or disprove the worth of existing practices?

What steps can we take to facilitate experimentation?



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## The Book Column

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### Professional Books

**Address and Proceedings.** Washington 6, D. C.: National Education Association, 1201 16th Street, N. W. 1958. 470 pp. Contains the addresses and proceedings of the 96th annual meeting of the National Education Association in Cleveland, Ohio, June 29-July 4, 1959. Also contains the names of the delegates. Indexed.

**ADLER, ALFRED.** *The Education of the Individual.* New York 16: Philosophical Library, Inc., 15 E. 40th Street. 1958. 159 pp. \$3.50. Today the conscientious educator is confronted with several serious dilemmas. For one, he is faced with the realization that the education of the gifted child has been neglected; more opportunities must be made available to him. On the other hand, are we to sacrifice our energies on behalf of the many average students in our schools to those few who show greater promise? In the light of this currently raging controversy, Dr. Adler's theme is a particularly appropriate one. We are reminded of the significance of each individual at any given moment of his life.

Dr. Adler holds that the individual is significant and unique because he is related to others, influences, and is influenced by them; because he is the equal of his fellowman; because no moment of his life is ever lost; and, finally, because he will, at times, serve as a catalyst to enable the significance of others to emerge.

**BROWN, N. C., editor.** *The Study of Religion in the Public Schools.* Washington 6, D. C.: American Council on Education, 1785 Massachusetts Avenue. 1958. 243 pp., (6 x 9). Paper, \$2.50. This book is a candid and critical appraisal of the many problems and issues involved in the study of religion in the public schools and offers suggestions for a factual approach to the subject. It is concerned with religious literacy as an essential element in a liberal education, as an aspect of our culture and a part of our history.

The volume consists of papers and constructive discussions of the papers arranged in logical sequence. The first section provides the approach, the second delves into a specific problem, and the final section poses the general problem.

The approach, setting the limits for the discussion, includes a review of the policies and activities of the Committee on Religion and Education since 1947 and a survey by a professor of law of the constitutional and legal limits of religious education in the public school system. A specific problem explores religion in the history of American ideas and considers in detail how and when references to religion are integral to American history at various levels of study. The general problem analyzes the relationship of religion to public education and presents recommendations for future research.

**CASEY, R. S., J. W. PERRY, ALLEN KENT, and MADELINE BERRY.** *Punched Cards: Their Application to Science and Industry.* New York 22: Reinhold Publishing Corp., 430 Park Avenue. 1958. 707 pp. \$15. Thoroughly revised and enlarged, this second edition surpasses even its classic predecessor

in clearly describing every aspect of punched card systems. All who handle large masses of data will find here the principles and methods which apply to small files or the largest, and descriptions of the entire range of cards and equipment now available. This is the only volume including both hand- and machine-sorted cards, and the only one that serves as an elementary instruction manual as well as an advanced handbook.

In addition to the mechanical techniques of punched cards and related devices, the book also shows how to find, arrange, use, store, and retrieve information of any kind. Such considerations are a prerequisite to any system, and they can be applied to a simple collection of data in notebooks, on plain cards, in correspondence files, and finally to data handling by punched cards and electronic computers.

The book's approach to the subject is completely realistic. The chapters are written by specialists who have had years of experience in developing the methods explained here. The book can be profitable to anyone who has or uses a collection of facts, figures, things, or ideas, from stamp collections to sales statistics, from photographs to physical science. Now that advances made since the first edition are available, this becomes the final authority on punched card systems and their applications.

*College Teaching by Television.* Washington 6, D. C.: American Council on Education, 1785 Massachusetts Avenue, N. W. 1958. 246 pp. \$4. During the past five years, television has developed from a potential instrument of higher education to an integral part of college teaching. Today, as educational television emerges from this period of pioneer work, interest is shifting from the peripheral question of money, facilities, and electronic techniques to the central concern for effective teaching by television.

These proceedings of the Conference on Teaching by Television in Colleges and Universities report what faculty are thinking about this new medium in its relation to teaching and learning. How does instructional television compare with conventional methods of teaching? What are its advantages? How cope with its limitations? How have students and teachers responded to its use in academic centers? What research has been done, and what does it reveal? Where has televised instruction been tried, for what courses, and with what results? What principles and conditions of learning are involved in the effort to improve televised instruction? What are some of the significant concepts of educational television? What relation do they bear to our cultural patterns and educational philosophy as a whole? These and related questions—many of them at the heart of the educational process—are here given detailed consideration.

COVELLO, LEONARD. *The Heart Is the Teacher.* New York 36: McGraw-Hill Book Company, 330 W. 42nd Street. 1958. 284 pp. \$4.75. A great and dedicated teacher's success at one of the most challenging educational assignments of our times forms the basis of this inspiring educational autobiography. It is the story of Leonard Covello, who, starting life as an Italian immigrant in the 1890s, became a beloved teacher and later principal in the teeming, poverty-ridden melting pot of New York's East Harlem. This book takes an unusual and optimistic view of the "blackboard jungle" of modern, big-city education. For Leonard Covello proved, through half a century of teaching and encouraging boys, that even seemingly incorrigible

delinquents can be turned into useful and productive citizens, given affection, attention, and guidance.

The boys who came under Dr. Covello's influence were frequently wild and rebellious, mostly from impoverished homes, many without any comprehension of English. In touching and exciting anecdotes, Dr. Covello tells how he handled the "bad boys" he refused to believe were bad. His work took him from the classroom into the homes of his students, into the alleys and streets which were their playgrounds. He taught evening language classes at the YMCA; he organized "store front" schools to carry education to adults as well as the children. The best schools, Dr. Covello believes, are those that are deeply rooted in their communities and that give their pupils a sense of place and responsibility in the neighborhood and the world at large.

Through dramatic episodes drawn from his own experience, Leonard Covello recreates the struggles, the triumphs, the heartbreaks of an extraordinary teaching career. His colorful and inspiring story will give the reader new faith in the creative powers of the human heart.

CUTTS, N. E., and NICHOLAS MOSELEY. *Teaching the Bright and Gifted*. New York 11: Prentice-Hall, Inc., 70 Fifth Avenue. 1957. 284 pp. \$4.75. This book is designed to give practical help to classroom teachers in elementary and secondary schools and to teachers in training. It has grown out of many years of experience in teaching courses on the gifted and in counseling bright students and their parents. Materials have been contributed by well over a thousand teachers, parents, and pupils, and quotations from these materials have been liberally used to provide true-to-life illustrations. Valuable information that has hitherto been available only in scattered magazines and books has been gathered together and organized to provide answers to the questions that teachers commonly raise. The appendixes contain annotated references to books and pamphlets about the bright and talented, to tests, and to books on materials and methods in the subjects that are commonly taught in the various grades. There is a list of problems into which further research is needed, and this list also provides topics for group discussion.

FLACK, M. J. *Sources of Information on International Educational Activities*. Washington 6, D. C.: American Council on Education, 1785 Massachusetts Avenue, N. W. 1958. 12 pp. This book is an exploratory survey of sources of information about international educational programs and opportunities for participation. This report, sponsored by the Commission on Education and International affairs of the American Council on Education, provides information for United States and foreign students and faculties, and for United States institutions. It includes information on more than fifty agencies, addresses of Culture Attaches in the United States, and a bibliography of selected source materials.

FORRESTER, GERTRUDE, editor. *Occupational Literature*. New York 52: The H. W. Wilson Company, 950 University Avenue. 1958. 603 pp. \$6.50. When the 1954 edition was published, the *Library Journal* said: "After six years a new edition of this book supersedes the old one. A good reference tool has been turned into an even better one."

The 1958 bibliography brings together in a central index approximately 4,400 selected references to current occupational literature. It includes more than books and pamphlets which simply describe occupations. Since the

preparation for a career often involves the selection of a school for training, one section describes school and college information. In addition to the literature describing individual occupations, the following sections are included: Apprenticeship, Bibliographies, Choosing a Career, Scholarships, Periodicals, Job Seeking, Textbooks, Package Purchases, Charts, Posters and Visual Aids, Preparing for Examinations, Foreign Study or Employment, Legislation and Social Security, Occupations for the Handicapped, Use of Occupational Information, Information about Colleges, and Schools for Vocational Training.

Approximately 3,500 pamphlets have been included in this important bibliography; there are about 900 references to books. About 3,000 of the references in this new edition are to literature published in the last five years. Over 1,000 publications are available free of charge from their publishers. Compared to the 1954 edition with 467 pages, the 1958 edition has 603 pages.

"If one had to begin an occupational library with a single publication," said the *Personnel and Guidance Journal* of the 1954 edition, "this volume would be an outstanding possibility. It is probably the most comprehensive and thorough key to information about occupations available in the United States today, and is, therefore, an indispensable tool in vocational guidance. . . . In short, the volume is planned with unusual insight into the needs of guidance and personnel workers, librarians, and laymen who may consult it for their own information. Doubtless it was this planning, as well as the comprehensiveness of the book and the meticulous care with which the work was done, that influenced a jury of reference librarians to vote it one of the top ten reference books of 1954."

*Teachers College Record* called the previous edition "an indispensable tool for anyone who is engaged in helping people solve vocational problems." *Career Index* said "Everyone, who refers to sources of occupational information, or who refers counselees to such information, will find the book indispensable."

An additional helpful feature of the book—items recommended for first purchase are starred, and exceptionally valuable references are double-starred. This invaluable guide to occupational literature should unquestionably be in the library of every high school in the country; in every public library; in the library of every college; on the desk of every teacher of a class in occupations; and of course, at the elbow of every vocational counselor.

FUZAK, J. A. *Research Report*. Chicago 37: American Technical Society, 848 E. 58th Street. 1958. 98 pp. Paper, \$1.50. This book is the product of a five-year study into the learning experiences of more than 500 junior high-school students from the city of Lansing, Michigan. The study was undertaken to examine the relationship between physical maturation and class performance in beginning industrial arts students.

Not too many years ago industrial arts was viewed by most teachers and administrators as a pre-vocational type of training, concerned mostly with instruction in the use of simple tools. In recent years, however, there has been substantial development in the nature and scope of industrial arts training objectives. Educators today realize the importance that industrial arts can play in developing the basic reasoning skills that are so important to successful scientific and technological education.

The author has for several years been in the forefront among educators who have realized the need for extending the goals of industrial arts educa-

tion. His study served a double research function. In addition to investigating an area of critical importance to the effective teaching of industrial arts, it provided valuable experience for student teachers in the use of modern research techniques, as part of the industrial arts teacher-training program at Michigan State University.

Results of the study indicate that the degree of physical maturity attained by beginning shop students is often of primary importance in determining their ability to master the manipulative processes required for successful shopwork. In addition, it provides a simple, accurate, and scientific method for teachers to measure physical maturation in beginning students. Complete information on its effective use and the interpretation of results are included in this report.

GROSS, NEAL. *Who Runs Our Schools?* New York 16: John Wiley and Sons, Inc., 440-4th Avenue. 1958. 195 pp. \$4.75. American schools, under the American scheme of public education, belong to the people. The people have a right to know the facts about an enterprise in which they invest so heavily and from which they expect so much. In most communities there is not a single public but rather many publics that hold different and, frequently, contrary views about public education. The major objectives of this book are to examine the impact of this condition and to shed light on answers to questions of basic importance to both citizens and educators.

This book is based on a research program. The findings in this report emerge from lengthy and anonymous interviews with approximately half the school superintendents of Massachusetts and their school board members. On the basis of these interviews, the author presents a realistic appraisal of many hitherto unrecognized problems confronting the public schools and makes a series of recommendations for their solution. The book reports conditions, both positive and negative, which need to be recognized and dealt with now if this system, the "engine of democracy," is to be kept operating smoothly and effectively.

HAMILTON, R. R., and E. E. REUTTER, JR. *Legal Aspects of School Board Operation*. New York 27: Bureau of Publications, Teachers College, Columbia University, 525 W. 120th Street. 1958. 213 pp. \$4.95. Here is a nontechnical book presenting information needed for dealing with the legal questions that frequently arise in the operation of the public schools. It covers the basic legal rights, duties, privileges, and responsibilities of those involved in any way with the public school enterprise. School board members, school administrators, teachers and other employees, parents, those doing business with the schools—these are some who will certainly find this volume a valuable resource.

The material is organized according to specific problem areas, and the various sources of the law—constitutions, statutes, state regulations, local regulations, and the common law—are cited and discussed as they relate to these areas. The main classifications in this unique and practical orientation are indicated by the chapter titles: The Local School Board in the Legal Structure, The Authority of School Boards in Relation to Pupil Personnel, The Authority of School Boards in Relation to Curriculum, The Authority of School Boards in Relation to Employed Personnel, The Authority of School Boards in Relation to School Property, The Authority of School Boards in Relation to School Funds, Contractual Authority of School Boards, School

Board Membership and Meetings, School Board Procedure, Liability of School Districts and Board Members.

The authors have analyzed and synthesized the law in a thorough and objective manner. To assure accuracy, they have included many quotations from judicial opinions. About 300 cases are cited specifically, and generalizations are based on hundreds of others.

JACOBSON, P. B.; W. C. REAVIS; and J. D. LOGSDON. *The Effective School Principal*. New York 11: Prentice-Hall, Inc., 70 Fifth Avenue. 1954. 639 pp. \$6.95. Because the authors, in undertaking this volume, were well aware of the challenge of the task, they pooled their resources to carry it out. The results of more than 1,500 studies, investigations, and works on administrative topics have been used in support of their generalizations. In performing what they hope will prove to be a service to the teacher who aspires to become a principal and to the individual who is now engaged in the work of the principalship, the authors have drawn upon their own extended experience as principals, supervisors, and professors of education. Throughout the book they have attempted to maintain a carefully considered balance between administrative theory and successful practice.

The book presents a departure from most treatments of the principalship in that comprehensive consideration is given the common elements in the work of principals in both elementary and secondary schools. Differentiation is made in the treatment whenever a function varies significantly from elementary to secondary school. This plan is not experimental with the authors, but has been followed for a number of years by two of them in a course on the "Duties of School Principals" at the Department of Education of the University of Chicago. The encouragement of their many students in this course, and at the University of Oregon, provided the inspiration for this attempt to put into revised form the materials presented in courses for persons who seek to provide educational leadership in an individual school.

KELIHER, ALICE. *Talks with Teachers*. Darien, Connecticut: Educational Publishing Corp., 23 Leroy Avenue. 1958. 148 pp. This book is a timely collection of basic principles of modern education. Critics of today's schools have only to read these practical and common-sense discussions of modern problems to see the reasonableness of the philosophy of the modern school. This book is one which individual teachers, school faculties, and parents will find useful and constructive. It can be thought of as a source book for in-service groups. It clarifies the changing roles of the teacher and the school in meeting the demands of today's world.

KNELLER, G. F. *Existentialism and Education*. New York 16: Philosophical Library, Inc., 15 E. 40th Street. 1959. 176 pp. \$3.75. Today our educational system is a matter for serious concern. The author says we must be made to realize that, unless widespread reforms are instituted, our very progress as a nation is in jeopardy. In this volume George Kneller presents his idea of a possible solution to what he believes is one of the basic evils of our present theories of education and, in fact, of our Western culture. Dr. Kneller decries the plight of collectivized man, a human being faced with accepted categories of thinking that condition his every attitude. Many of these categories have been found eminently successful, but many he believes have outlived their usefulness.



MURPHY, GARDNER. *Human Potentialities*. New York 3: Basic Books, 59 Fourth Avenue. 1958. 350 pp. \$6. Has man reached the evolutionary limits of his development? And, if not, what direction is his future development likely to take? These are among the questions explored by the author, noted psychologist and scholar, in this book, which weighs the scientific evidence *pro* and *con* on the subject of man's future state. According to him, man's growing control of the forces of nature gives us every reason to believe that he is poised on the threshold of evolutionary changes as great or even greater than those that have occurred since *homo sapiens* first appeared on Earth. Although no one can predict what the future of the human race will be, the author believes that man's knowledge of physics, biochemistry, psychology, and genetics, among other sciences, makes it possible—and perhaps even probable—that, for the first time in history, conscious choice and deliberate decision can affect the biological and intellectual directions of the race's potential development.

RICHARDSON, J. S. *Science Teaching in Secondary Schools*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 1957. 399 pp. \$6.50. This book discusses the place of science in the secondary school and its relation to society in the process of developing scientific ways of thinking and acting. Those who have competence in science and responsibility for science in the school curriculum face problems that transcend the transmittal of content. They must be concerned with the social and economic implications of science and technology. They must carry the responsibility for the advancement of science in all its directions through their teaching. Most critical of all, they must stimulate and nurture the creative intellect. This volume is directed to those who are or will be science teachers or are otherwise concerned with science in our schools.

The book is organized into the following 14 chapters: Science in Today's World; Some Principles Underlying Effective Science Teaching; Science in the Secondary-School Curriculum; Methods and Procedures in Science Teaching, (I) Laboratory Work, Demonstrations, and Projects, Methods and Procedures in Science Teaching, (II) Discussion, Committee Work, Field Trips, and Other Procedures; Teaching for the Method of Science; Evaluation in Science Teaching; Preparing Teaching Plans in Science; Student Guidance and the Teaching of Science; Facilities for Science Teaching; Materials for Science Teaching; Audio-Visual Resources for Science Teaching (I) Display and Its Use, Audio-Visual Resources for Science Teaching (II) Photography, Projection, and Audio Aids; Growing Professionally; and Testing Hypotheses.

WEYER, E. M., editor, and F. L. HAHN, art director. *The Illustrated Library of the Natural Sciences*. New York 20: Simon and Schuster, 630 Fifth Avenue, Rockefeller Center. 1958. 3,072 pp. (4 volumes). \$25. From the aardvark to the zebra, from the birth of glaciers to the conquest of outer space, from the family tree of the dinosaur to the races and cultures of man, over a million words of narrative by leading scientists and science writers are used in this authentic story of the natural sciences. The text of these four volumes is illustrated with more than 3,000 photographs in color.

Each year more than two million men, women, and children visit New York's world-famous American Museum of Natural History to enjoy, marvel at, and learn from its incomparable exhibits. Now the excitement and authority



of the museum have been captured in these four volumes. Every field of natural science is represented. The thousands of pictures take the reader into the wilds of Africa, the wastelands of Antarctica, the exotic islands of Indonesia, the deserts of Arabia, up into the atmosphere and down to the floor of the sea. They take you into the scientist's laboratory and through the halls of the American Museum itself. Through the high-powered microscope one observes the incredible habits of tiny insects. One views the contour of the earth as it appears from a rocket hurtling into outer space. These books will appeal to all kinds of people. These volumes bring to the reader the story of the universe, the earth and its inhabitants, together with their relation to each other.

WHITING, C. S. *Creative Thinking*. New York 22: Reinhold Publishing Corp., 430 Park Avenue. 1958. 182 pp. \$3.95. This book examines current thinking about creativity in a common-sense, objective manner. It provides management with sound advice and counsel on the subject of creative training and its benefits. A major portion of the book concerns itself with operational techniques of creative thinking—group discussion methods such as brainstorming, analytical or mechanical techniques that various persons or groups have found useful in stimulating them to produce new ideas. Each technique is fully described and evaluated as to its strengths and weaknesses.

The book also contains descriptions of the General Electric Creative Engineering Program, the McCann-Erickson Marketing Communications Workshop, the creative training programs of the A. C. Spark Plug Division of General Motors, and the Gary Works of the U. S. Steel Corporation. These programs serve as guides in the establishment of new programs. Finally, suggestions for putting across new ideas are included.

#### Books for Teacher-Pupil Use

ACHESON, P. C. *Our Federal Government: How It Works*. New York 16: Dodd, Mead and Company, 432 Fourth Avenue. 1958. 176 pp. \$3. The founders of our Federal government who drew up the Constitution would hardly recognize the enormous and complicated organization which has grown out of their extraordinary document to serve our citizens today. This book is designed to give a brief introduction to the structure of our government and the ways in which it works. Beginning with a discussion of why a government is necessary, it describes the conception of the Constitution, the significance of the Preamble and the importance of the system of checks and balances among the three major branches: the legislative, executive, and judicial. The organization and function of the Senate and House of Representatives, the Federal courts, and the presidency are described. A short sketch of each of the executive departments represented by the ten cabinet posts is given together with a description of their various key responsibilities. Finally, attention is turned to the more recent development of agencies and committees.

ANGLE, P. M. *The American Reader*. Skokie, Illinois: Rand McNally and Company. 8255 Central Park Avenue. 1958. 719 pp. \$7.50. This book tells the story of the United States as Americans would want it to be told—in their own words. This is a record—personal, intimate, inimitable—of a great nation emerging literally out of a "New Worlde." From the diaries, journals, letters, and newspaper accounts of those who were there comes this dramatic tale of a country being wrenched out of the wilderness and converted almost over night into a power among nations.

This is their story—the Americans,—from the Nina, Pinta, and Santa Maria to Explorer I. Here, in the language of the participant and observer, is a living chronicle of the great adventure. Here is the painfully eked-out scrawl of a soldier in the Civil War, and the magnificent logic of Benjamin Franklin urging the adoption of the Constitution. Here is the significant and the colorfully incidental in that vast panorama which has been the American scene.

These are no belles lettres or documents; these are the warmly human revelations of the man behind—as well as in front of—the gun. These are the personal accounts of the big and the little people who have stood in the forefront of American history and observed.

The 248 accounts reveal the dramatic ingredients in the American way of life. A president suffers a heart attack while the nation studies with clinical gravity minute observations on his condition. Whalemen churn the sea in the wake of the gigantic mammal which provides the American household with oil for its lamps and milady with stays for her corset.

BAHM, A. J. *What Makes Acts Right?* Boston 20: The Christopher Publishing House, 1140 Columbus Avenue. 1958. 207 pp. \$4. The aim of this work is to stimulate thinking—about acting. Whenever an act is judged to be right or wrong, it is natural to inquire Why? Since this question has yielded many different answers, it is natural, also, to judge these answers. In searching for a best ultimate answer, the author has assembled for the first time, so far as he knows, a list of qualifications of a good theory of right action. Each of the theories is tested by measuring it against the list of qualifications. The reader can be his own judge of the adequacy of the list.

This thought-provoking volume has been compiled, first, to help the reader become more fully aware of some major types of view and the kinds of arguments used for and against each; and, second, to promote the impression that in light of the relatively equal abilities of each to present itself in favorable light, the problem of the nature of rightness is much more profound, and its solution needs much deeper insight than is commonly supposed.

BALL, ZACHARY. *Keelboat Journey*. New York 10: E. P. Dutton and Company, Inc., 300 Fourth Avenue. 1958. 190 pp. \$2.95. This is the hard-hitting, boisterous adventure story of the voyage of the Tomahawk, first keelboat to reach the headwaters of the Missouri River in 1831 and establish a permanent trading post in the Oregon territory. Seen through the eyes of Garth Madden, the youngest member of the Tomahawk's crew, the excitement and danger of the journey, the character of the roistering keelboatmen, the stark beauty of the wilderness, the wild encounters with hostile Indians, and the hazards of the turbulent river itself all assume a startling reality. As the craft penetrates the Blackfoot country, there is danger lurking and an unexpected turn of events, when a trap set for Garth and his friend catches a traitor.

*Better Homes and Gardens Salad Book*. Des Moines 3, Iowa: Meredith Publishing Company, 1716 Locust Street. 1958. 160 pp. (7½" x 11½"). Herein is contained every phase of salad making, from selecting the best quality fruits and vegetables to topping completed creations with tangy dressings or garnishes. Over 100 full-color pages show how to make 350 dishes look flavorful and tempting. Dozens of quick tips provide short cuts to appetizing salads. Herein the editors have included plain and fancy salads for every occasion. Here's inspiration to put new zest in marketing and in meal making. Here are the lush bowl salads with their bright, crisp vegetables, the homespun coleslaws and picnic salads, handsome fruit salad luncheons, gay

relish trays—all fun to fix and easy to serve. The book is beautifully illustrated in color. Recipes are carefully worded for ease in preparing the salads.

COMMAGER, H. S. *The Great Declaration*. Indianapolis 7: Bobbs-Merrill Company, 730 N. Meridian Street. 1958. 112 pp. \$2.75. Here is the story of the Declaration of Independence from its first faint stirrings in the minds of men to the celebrations which greeted it from state to state when it was finally passed. The story is told in the words of those who wrote it, words skillfully woven together into a dramatic narrative, then put in their historical setting by the author.

Here we meet those bold and farsighted men who made and won our independence: the youthful Thomas Jefferson, who drafted the document; John Adams, the "Atlas" of the debate; venerable Benjamin Franklin, who gave sage counsel; fiery Patrick Henry, who set men's hearts pounding with excitement; Thomas Paine, whose *Common Sense* converted the timid and the doubting. We watch these and others as they try to find some way out of the difficulties that hang over them. We listen to their discussion in the Continental Congress. We follow in detail the drafting of the Great Declaration. We ponder, with its authors, the meaning of the "self-evident truths" which it contains. We share John Adams' exultation when it is finally passed—Adams who "through all the gloom" saw "the rays of ravishing light and glory."

How the fundamental charter of our liberty came into being—one of the greatest stories of our country's past—is told here by a distinguished historian and experienced writer. The pen sketches and the reproductions of paintings and woodcuts complement the text material and supply the young reader with a unique introduction to the art of the times.

COOMBS, C. I. *Airmen and What They Do*. New York 21: Franklin Watts, Inc., 699 Madison Avenue. 1958. 192 pp. \$3.95. Dick is a Navy pilot, one of the many young men and women whose exciting careers the author describes. Test pilots, military service airmen, plane designers, radar operators, civilian fliers, helicopter operators, stewardesses, WAF privates, the throngs of men and women who support the air-borne in scores of ground jobs—all are here.

CRUICKSHANK, ALLAN and HELEN. *1001 Questions Answered About Birds*. New York 16: Dodd, Mead and Company, 432 Fourth Avenue. 1958. 307 pp. \$5. Seldom if ever has a single volume contained so much bird information as this one. Bird names and classifications; their anatomy; the especial forms and uses of bills, feet, tails, skin, feathers; the senses of birds; courtship, eggs and nest; flight and migration; ranges and habitats; songs; bird banding; birds in history and folklore; numbers and sizes of birds; bird conservation—these are but part of the ornithological coverage of the book. For clarity and compactness, the question and answer method has been used throughout, and the book is indexed in great detail for quick reference. It is illustrated by line and by halftones based on the authors' photographs.

The authors are among the foremost American ornithologists of our time and are especially noted for their bird photography. Allan Cruickshank is author of many books and studies in various ornithological fields.

DAHL, BORCHILD. *Karen*. New York 10: E. P. Dutton and Company, Inc., 300 Fourth Avenue. 1947. 313 pp. \$3.50. This is the story of a Norwegian girl who emigrated to the United States in the 1870's and of how, starting out as a servant, she became a leader of the community in which she lived. Interpid, hard working, and honest, Karen is typical of the women who

brought with them from the Old World the kind of courage and resourcefulness that qualify them for a high place among the pioneers who built our country.

In all her undertakings there was nothing timid about Karen. Where occasion demanded—as in the case of the real-estate dealer who was not unwilling to take advantage of a “foreigner”—she could be cunning, daring, and even ruthless. But she was also loving, sympathetic with those in trouble, and optimistic in the face of seemingly unsurmountable obstacles. She had need of optimism, for marriage and life on the prairie gave rise to very difficult problems. Her handling of them makes remarkable interesting and enlightening reading.

DAVIS, D. L., RABBI. *Understanding Judaism*. New York 16: Philosophical Library, Inc., 15 E. 40th Street. 1958. 128 pp. \$3. In one small volume a basic account of Jew and Judaism is presented, intended for all who seek an understanding of both. The book begins with an outline of Jewish history from its beginnings to the present time. It contains a simple presentation of the basic concepts of Judaism; a description and explanation of Jewish practices and institutions; a picture of the American Jewish community, and an account of the Jewish attitude towards proselytizing and the requirements for the conversion to Judaism. To assist the reader, a vocabulary of terms of Jewish interest provides an easy, ready-to-hand explanation of commonly used Hebrew expression.

DICKENS, CHARLES. *David Copperfield*. New York 20: Pocket Books, Inc., 630 Fifth Avenue. 1958. 863 pp. 75¢. This is the complete text of Dicken's favorite brain child with an introduction by Joseph Mersand. This is one of the classics read by most persons.

DODGE, M. M. *Hans Brinker or the Silver Skates*. New York 17: Charles Scribner's Sons, 597 Fifth Avenue. 1958. 345 pp. \$3.50. This new edition of Hans Brinker, which became a famous book on the Scribner list, has delightful sketches by a Dutch-American artist. Peter Spier grew up in the village of Broek, where the skating race was held—and he tells us it has not changed very much since Hans Brinker's day. He has been most careful to make the details of place and costume authentic—which have not always been in the pictures for various editions.

du JARDIN, ROSAMOND. *Wedding in the Family*. Philadelphia 5: J. B. Lippincott Co., E. Washington Square. 1958. 192 pp. \$2.75. When Tobey Heydon got married, her fifteen-year-old sister Midge felt both joyful and sad. She was delighted that her sister and Brose were so happy, and she was thrilled with the festivities of the wedding, but sad that Tobey would be leaving home. The best man, Johnny Randall, was an older man, a tall Southerner with a devastating line, and Midge began to fall for him. But Johnny's behavior and brotherly advice from Brose made her act her age.

Later in the summer, Midge went with her family and her friend Judy to the lake resort where the Heydons spent their vacations. Midge and Judy were plunged into the doings of a gay crowd of teenagers, and Midge again found herself attracted to a good-looking, smooth, popular young man. Her friend Tom Brooks, who worked at the hotel soda fountain, helped her to throw off this infatuation, and before school started, Midge knew she had gained in maturity.

DUNCAN, LOIS. *Debutante Hill*. New York 16: Dodd, Mead and Company, 432 Fourth Avenue. 1958. 222 pp. \$2.75. Pretty, popular Lynn Chambers was a senior in high school when the mother of an unpopular girl

decided to introduce debutantes in Rivertown for the first time. Paul Kingsley, the boy Lynn had dated junior year, was away at college, and the excitement of making a debut seemed to her a wonderful way of filling a lonely time. What a blow it was to have her doctor father denounce debutantes as "undemocratic" and forbid her to become one! "But," her mother comforted her, "when some doors are closed, others will open."

And Lynn found this to be true. Now that she was no longer one of the "Hill Crowd," a whole new world opened before her. She became friends with talented Anne Masters and, in order to be a "good influence," dated her brother Dirk, a tough, insolent boy who frightened yet intrigued her. She became involved in a school robbery, helped clear a serious accusation and survived what appeared to be a hopelessly broken romance with Paul, who seemed to take "the other side." It was a year of heartache for Lynn, but a year of growing up as well.

EMERY, ANNE. *A Spy in Old Philadelphia*. Skokie, Illinois: Rand McNally and Company. 8255 Central Park Avenue. 1958. 208 pp. \$2.95. With the British occupying Philadelphia in 1777-78, many American patriots risked their lives to send news of British movements to General Washington. Young Johnny Monroe, as fiery a patriot as any American boy could be, finds himself caught up in an exciting network of adventure and intrigue in this rousing story of Revolutionary days.

Johnny wanted more than anything else to fight the British, but what could he do at home, just working in his father's mill, especially when his father proclaimed himself a Tory? Then Johnny's Uncle Jacob is arrested as a spy, and Johnny learns the truth about his father's mysterious activities and his reasons for posing as a Tory. Johnny, anxious to aid the patriot cause, almost makes a disastrous mistake, but he also helps to trap a traitor who is betraying the secrets of the patriots.

GILSTRAP, ROBERT, and IRENE ESTABROOK. *The Sultan's Fool*. New York 17: Henry Holt and Company, Inc., 383 Madison Avenue. 1958. 95 pp. \$2.75. Long ago there was magic in the lands of North Africa. This magic is reflected in folk tales—in tales of sultans and a sultan's fool, a little fat goat who manages to frighten a hungry jackal, and a man who refuses to work, muttering only, "Allah will provide." The warmth and color of these folk tales captivated Robert Gilstrap and Irene Estabrook when they lived in North Africa, and they took the time to write them down so young people of other lands could enjoy them.

Sometimes the humor of the stories lies in a ridiculous situation. A wealthy merchant away from home on a long journey leaves all his gold under the olives in his olive jar! More often the humor lies in wise acceptance of out-of-the-ordinary things. When the sultan receives a bit of old string as a gift from the illustrious caliph, he is surprised, but he is neither angry nor insulted.

GOULD, JEAN. *That Dunbar Boy*. New York 16: Dodd, Mead and Company, 432 Fourth Avenue. 1958. 256 pp. \$3. Paul's father liked to tell stories to his three little sons. He told them long, exciting tales of his adventures in escaping from slavery and sometimes he made up scary stories about the "bougah" man. One night when Paul's two older brothers were coming home rather later than usual in the dusk, they heard a ghostly Woo-o! Woo-o! near the house. It had the two boys quivering and quaking until their mother came out on the porch calling "Paul, Paul, where did that little mischief maker go?"

and a very small and delighted "bougah man" was extracted from under the porch.

Paul always had a bubbling sense of fun, whether he was playing jokes or making up rhymes. Jean Gould, in this biography of the famous Negro poet, has caught the spontaneous gaiety in his life which is so characteristic of his poems. His was a hard life and later a tragic one, but he lived it always to the full and this is, consequently, a vivid, active, entertaining book, even though much of its subject matter is of deep significance for our times.

GRIFFITHS, HELEN. *Horse in the Clouds*. New York 17: Henry Holt and Company, Inc., 383 Madison Avenue. 1958. 124 pp. \$2.75. When Martin saw the colt, wild-eyed and awkward, standing next to his mother, he knew he had found his colt. But Martin discovered that finding his colt and owning him and riding him were three very separate things. He had not reckoned on the colt's wily mother—the mare whose every instinct it was to protect her son from capture; nor on the power, intelligence, and stamina of the colt's father who used all of his resources to keep as his own his devoted band of mares. And more important, Martin hadn't counted on the colt himself, who might acknowledge him as owner but not as master.

HILLARY, SIR EDMUND, editor. *Challenge of the Unknown*. New York 10: E. P. Dutton and Company, 300 Fourth Avenue. 1958. 221 pp. \$3.75. This book covers many different fields of modern exploration, ranging from the white desert of the Antarctic to the dark continent of Africa, from the sea floor to the highest mountains, from subterranean caves to outer space. Here are twelve inspiring first-hand accounts by men who have set out for the unknown to discover for themselves what lies beyond the limits of previous exploration. Here is that rare spirit, which, as Sir Edmund Hillary states in his foreword, will lead a man on "for the pleasure of searching, and not for what he may find."

HOLT, STEPHEN. *Prairie Colt*. New York 36: Teen Age Book Club, 33 West 42nd Street. 1958. 160 pp. 25¢. The story of a rescued colt and Leif's achievement in winning the annual Stockman's Race.

HOLTON, GERALD, editor. *Science and the Modern Mind*. Boston 8: Beacon Press, 25 Beacon Street. 1958. 120 pp. \$3.95. Gerald Holton is the editor-in-chief of the American Academy of Arts and Sciences. The nine contributions in this volume, ranging from Henry Guerlac's discussion of Montesquieu, Voltaire, and the Baron d'Holbach to Howard Mumford Jones' "A Humanist Looks at Science," originated within the Academy as part of a conscious and concerted effort to give the intellectual community a voice of its own and to increase the fruitful communication between different members of the scholarly world and literate laymen. The refined tools of specialization in the humanities, the sciences, the social studies, and public affairs have brought gratifying successes in the special fields; but it is generally agreed that they have increased the difficulty of communication between different areas of the learned community. Each essay in this book was written to help focus attention again on that which makes each specialist a member of one community; and the whole effort is an attempt "to lift each of us above his cell in the labyrinth of learning in order that he may see the entire structure as if from above, where each separate part loses its comfortable separateness."

HONNESS, ELIZABETH. *Mystery of the Wooden Indian*. Philadelphia 5: J. B. Lippincott Co., E. Washington Square. 1958. 188 pp. \$2.50. Christmas in New Hampshire! Barby, Nancy, and Doug Holland could think of



nothing more wonderful than to spend the Christmas holidays in their New England summer home. The last thing they expected was to become involved in a mystery. It began when the three went into the snowy woods to choose their Christmas tree and spied an abandoned sugarhouse looking eerie and lonely under silent trees. No wonder Doug screamed when he opened the creaky door and saw what was inside! This scary encounter turns into a delightful Christmas surprise and starts the Hollands and their neighbors, the Dartmoors, on the trail of a puzzle from the past which will delight young readers. A wooden Indian, a hidden journal with a secret code, a party telephone line, an ice storm, and a helpful librarian—all play a part in helping the children to unravel a long-unsolved mystery and to right an ancient wrong.

HUXLEY, JULIAN, SIR. *Religion Without Revelation*. New York 22: New American Library of World Literature, Inc., 501 Madison Avenue. 1958. 224 pp. 50¢. The author proposes a faith based on man's ability to reason, to seek the truth, to realize his highest and most creative years. He views man as a self-contained, self-sufficient entity. He suggests that to know what has been, to contemplate with awe what man might yet make of his own destiny is to be reverent and, in turn, religious.

INOUCHI, RIKIHEI; TADASHI NAKAJIMA; and ROGER PINEAU. *The Divine Wind*. Annapolis, Maryland: United States Naval Institute. 1958. 262 pp. \$4.50. In Japan's desperate aerial suicide offensive during the last year of World War II, more than 4,000 pilots hurled themselves and their planes into oblivion against the U. S. Pacific Fleet. The total number of casualties they caused among fleet personnel exceeded those sustained by the combined American ground forces in the entire Okinawa campaign.

The Japanese authors of this book were themselves staff officers with the Naval Special Attack Force (kamikaze) from the formation of the original 13-pilot unit in the Philippines, until the dissolution of the Force at the end of the war with the final sortie of disillusioned and embittered Admiral Ugaki.

This book presents to the American public for the first time a full account of the conception, organization, tactics, and training of Japan's suicide pilots. The psychological attitudes of these men who faced certain death are presented in their own words in a chapter devoted exclusively to their last letters home.

This book is the latest in the series of books published by the Naval Institute, portraying the naval history of World War II as seen from the viewpoint of prominent officers—enemy as well as Allied—who fought in that war.

The United States Naval Institute was founded in 1873 "for the advancement of professional, scientific, and literary knowledge in the Navy." Publisher of the widely quoted maritime journal, *United States Naval Institute Proceedings*, the Institute's list of publications includes books on naval history, navigation, seamanship, marine engineering, electronics, modern languages, biography, and other professional and general interest subjects. Today its 50,000 membership includes the nation's leading Naval, Coast Guard, and Merchant Marine Officers, and distinguished civilians interested in nautical affairs. Associate membership in the U. S. Naval Institute is open to all reputable citizens of the United States.

JORDAN, E. L. *Hammond's Pictorial Library of Pets, Plants, and Animals*. New York 17: C. S. Hammond and Company, Inc., 521 Fifth Avenue. 1958. 256 pp. (9" x 12¼"). This is a guide to America's cultivated plants and domestic animals. A treasury of fascinating information on the living



things around us. This beautiful family reference book is a companion to *Hammond's Nature Atlas of America* which has become an American classic.

We know quite a bit about wild flowers and wild animals, about the fish we catch and the game we hunt, but most of us know very little about the nature that surrounds us directly, the pets we keep, the animals we raise for food and wool, the crops we grow, our lovely garden flowers. This book tells the fascinating story of all these subjects, where they originated, how they evolved into modern breeds and species and where they are now raised. This useful and beautiful reference book will delight the whole family, bringing many pleasant hours of entertaining and informative reading.

This book contains 362 original full-color paintings of horses, cattle, sheep and goats, swine, rabbits, hamsters, and other pets. Poultry, dogs, cats, birds, tropical fish, fruit, nuts, vegetables, field crops, and garden flowers with a survey of their important orders and families are also included. Colorful, pictorial maps showing where each subject originated are unique in this volume. Full-color maps of North America show population distribution, rainfall and temperature, vegetation and physical features. Black and white production maps show where in the United States the important crops and herds of cattle, sheep, swine, and horses are raised. It is indexed by both common and scientific names to give a comprehensive cross reference of the many plant and animal names used in the book.

KAPLAN, J. D., editor. *The Pocket Aristotle*. New York 20: Pocket Books, Inc., 630 Fifth Avenue, 1958. 395 pp. 50¢. This pocket edition includes the most widely read, studied, and quoted works of the great philosopher. The editor's prefatory notes give the reader a convenient review of a man who has often been called the world's most important thinker. Included are sections of Aristotle's writings on physics, psychology, metaphysics, ethics, and politics.

KJELGAARD, JIM. *The Black Fawn*. New York 16: Dodd, Mead and Company, 432 Fourth Avenue. 1958. 223 pp. Soon after Bud Sloan had been sent to live at Bennett's Farm, he came upon a black fawn in the nearby woods, and from that moment the metamorphosis began that turned a frightened city-bred orphan into a dedicated young farmer, whose whole being is wrapped up in the life and lore of the fields and woods of Dishnoe County. But even more than his sense of identification with the black fawn, Bud was guided into maturity by Gram and Gramps Bennett. From Gram he learned for the first time what it is to love and be loved. And at Gramps' side he learned the ways of nature and the meaning of true sportsmanship.

KRUTCH, J. W. *Grand Canyon*. New York 16: William Sloane Associates, 425 Fourth Avenue. 1958. 292 pp. \$5. Twenty years ago, the author went to the Grand Canyon for the first time. Its wonder and magnificence drew him back time and time again. He has lived near it, explored and studied it in all its aspects. The result is an extraordinary book which says more, perhaps, than any other book that has been written about this spectacular creation of nature.

As a spectacle, the Grand Canyon attracts visitors from all over the world. Even more importantly, the Canyon is a biological unity and the most revealing single page of the earth's history to be found on the face of the globe. There is something here for everyone: the layman, the geologist, the naturalist, the biologist, the botanist—and each aspect is part of a larger picture in which geology, climate, vegetation, and animal life are linked together. Nowhere are

to be seen rocks older than those which form the sides of the Canyon's inner gorge. From before the age of the dinosaur and trilobite to the present day mule that takes tourists to the bottom of the gorge, it adds up to more than a billion years.

The author made, in one day, the billion-year journey from the Archean rocks to the rim, and everyone, specialist and tourist alike, will follow enthralled to see it with his eyes. The author also talks of the history—of the Spaniard, Cardenas, the first white man ever to see the Canyon in 1540; of the Americans, Ives, Merriam, Powell. He pays special tribute to Theodore Roosevelt who made the area a national park.

LAGMAN, J. H. *The Sweetheart of Broadway*. Boston 20: The Christopher Publishing House, 1140 Columbus Avenue. 1958. 182 pp. \$3. This book, a drama in four acts, is a fascinating romance of the theatre in the days when Sarah Bernhardt, Lillian Russell, John Drew, Louis Morrison, David Warfield, and many other famous actors of this almost forgotten period trod the boards. It is the tender, personal story of Gloria Manning and her fight for success on Broadway. Success, blasted ambitions, disappointments, uncertainties of show business, professional jealousies, heartbreaks and loyalties, all wind around a cast of sparkling, and some shady, characters and tell a story as bewitching as any you'll ever read. Readers will follow with breathless interest this play while enjoying an evocative recollection of a glittering and glorious era. Rich in humanness, sincerity and humor, one will find a full portion of reading pleasure in this exciting and nostalgic drama.

*Land, the Yearbook of Agriculture*. Washington 25, D. C.: Government Printing Office. 1958. 621 pp. plus 64 pages of pictures. \$2.25. This 1958 Yearbook of agriculture is a survey of the land Americans have, use, and need. It discusses the land that was here when the colonists came, its importance in our history and growth, the use and management of public and private lands, the income and valuation of land, resources and prospective needs, and emerging problems of ownership and control.

It considers the profound changes these later days have brought, and tries to see what they mean in relation to their land resources: the growth of population and cities; the growth of the size of farms and the decline of the farm population (for land, used by people for people, has meaning only in terms of people); the use of millions of acres for highways, airports, factories, and subdivisions; the expanding number of part-time and residential "farms" of those who want to live two lives in the country and the city; the difficulties of getting started in farming; the need for more group action as the problems exceed the scope of individuals.

A broad subject—one worthy of our best effort; one that demands sharp thinking, deep wisdom, and courage to face up to the Nation's problems. Of the reader it asks the same and is worthy of his close attention, for our future will depend greatly on what we do with our land.

The authors present no ready program, no easy solution, and no definite policy. That is not their intention or their province; policies and programs are made by the people and their elected representatives. The suggestions presented here are personal, individual ones and are not necessarily those of the Department of Agriculture or any unit of the government. Because the men who wrote the chapters were given no orders as to what they were to say, there are conflicts and contradictions. That is all to the good, however, because of the nature of the subject, which arouses strong opinions, depending (as one

writer says) on whose ox is gored, and because of their purpose, which is to spur one to forward-looking action.

LEEMING, JOSEPH. *Fun With Shells*. Philadelphia 5: J. B. Lippincott Co., E. Washington Square. 1958. 92 pp. \$3. Here is a hobby that can be pursued by craftsmen of all ages. The equipment is simple, the materials inexpensive and easily available. In this book, a companion to Mr. Leeming's many successful craft books, are clear directions and diagrams of shell jewelry, flowers, and novelties of many kinds that are fun to make and attractive to own or give away.

The use of shells for decorative purposes is not new, but it has been expanded greatly in the last few years. This book will be valuable to the many "do-it-yourself" enthusiasts who want help in working with shells. Jessie Robinson has made many illustrations that amplify and supplement as well as decorate the text.

LE GRAND. *The Tomb of the Mayan King*. New York 17: Henry Holt and Company, Inc., 383 Madison Avenue. 1958. 192 pp. \$3. Loaded down with presents from his family—paper bags of octopus, herbs, shrimp, clothes, and lunch—Jose boarded the bus for the city. He was leaving the seaport town of Progreso where he'd spent his fifteen years and worked with his father, a shrimp fisherman.

If Jose's past was unpretentious, his dreams for the future made up for it with splendor. In the ruins of the ancient Mayan city at Chichen Itza, Jose had seen the figure of the great Mayan chief, Tutul Xiu—a tall, stern figure wearing a high headdress of long, curving, green quetzal-bird feathers—seated on a red throne. With such an ancestor, Jose was ashamed to be only a fisherman. In the city he knew he could easily find work suitable to one of Mayan heritage and earn the respect of his ancestors.

In the tourist-trap city of Merida, Jose's ability to speak English lands him a job as a hotel representative at the airport. But every other hotel has a representative there, too, one who is more aggressive and sharp-witted than the honest, naive Jose. Unable to buttonhole even one customer for the Hotel Contento, Jose is fired. "Wolves, that's what these people are," concludes Jose. In Jose's further swift-paced adventures, he risks his integrity and very nearly loses his life before discovering a way of living which brings him happiness.

LOVEJOY, C. E. *Lovejoy's Prep School Guide*. New York 16: Harper and Brothers, 49. E. 33rd Street. 1958. 128 pp. (8½" x 11"). \$4.50. This book has been compiled to answer the many questions that arise in the minds of parents in making the best choice of a school in an increasingly competitive educational atmosphere. A paramount question and one frequently asked is: Why choose a private school?

The trend today is toward the increasing use of private schools, both boarding and day. Without joining the debate on the relative merits of public versus private schools, the author here enumerates some of the recognized advantages of private schools. Schools with small classes are better able to prepare students for college; educational guidance can be more concentrated and effective; the conference method of teaching is possible; remedial instruction can be provided; College Entrance Examination Board test groups can be organized in advance; both fast and slow learners can proceed at their own individual paces; and the "whole student" can be developed with greater attention to leadership, community activities, extracurricular opportunities, moral standards, and religious education.

There are various kinds of private preparatory schools. This book notes the following general categories: boys' schools; girls' schools; coeducational schools; boarding schools in the country, in town, in the mountains, and by the sea; country day schools; urban day schools; church schools; non-sectarian schools; large, medium-sized, and small schools.

Families considering private schools usually request catalogues and view-books, and visit the schools for consultations. Headmasters encourage this personal contact with parents and prospective students. This book will augment such visits, and even pave the way for them.

A separate listing of schools by religious affiliation appears in Chapter 4. Information on specialized schools—for the blind and deaf, for military training, for Indians, for Negroes, and for exceptional or handicapped students—is contained in Chapter 5.

Capsule descriptions of schools appear in Chapter 6, and are arranged alphabetically by state for easy reference. In selecting a school, parents and counselors can find at a glance the answers to such questions as tuition costs and fees, religious affiliation, the relation between boarding and day students, faculty-student ratio, library facilities, scholarships, admission requirements, curricula, accreditation, and recreational facilities.

MARIA, M. H. *The Structure of Arithmetic and Algebra*. New York 16: John Wiley and Sons, Inc., 440 Fourth Avenue. 1958. 308 pp. \$5.50. This book is designed for the reader with a limited background in science who wishes to understand the fundamental concepts that underlie the structure of algebra and arithmetic. For this reason it adopts a simple approach to the general methods of modern mathematics and at a leisurely pace explores and develops the main properties of real numbers as logical consequences of a system of fundamental assumptions. The author discusses the axioms in order of conceptual difficulty, their significant implications being explored and developed as they are introduced. The earlier axioms describe the four arithmetic operations, and the order relation, and develop the ordered field of rational numbers. These are followed by a careful examination of the more elusive axioms of induction and continuity.

McDERMOTH, I. E., and F. W. NICHOLAS. *Homemaking for Teenagers*. Peoria, Illinois: Chas. A. Bennett Co., Inc. Book 1, 1955. 492 pp. \$3.60; Book 2, 1958. 703 pp. \$4.96. Book 1 is a family-centered approach to the study of homemaking at the early teenage level. It is during this period of development between childhood and adulthood that young people become intensely interested in themselves as individuals and they eagerly welcome the opportunity to explore the avenues of self-expression and accomplishment in everyday living.

The great and all-embracing objective in this study is to impart an awareness of the tremendous value of a good home in the life of an individual—for those who are living in good homes, a realization of the precious gift which is theirs, and for those less fortunate, a yearning desire to have in the future the kind of home which is denied to them with their parents—and to inspire in all the determination to do their part in attaining the rich and rewarding goal—a good home.

The grouping of ten teaching units is based on the results of an investigation to discover the chief interests of average high-school boys and girls in the field of homemaking. Careful analysis of the answers to a questionnaire (more than 2,300 responses) pointed to the organization of ten teaching units with

varying degrees of emphasis. The aim of the questionnaire was to determine: (1) In what homemaking activities teenagers participate at home? (2) What problems at home or with friends are most troublesome?

A carefully selected list of additional reading materials is given at the end of each chapter for those who have time to do extra work on the subject. A list of audio-visual aids prepared with special care is also given at the end of each chapter. As all teachers know this is an excellent means of adding interest and understanding to the study of homemaking.

Book two approaches the study of home economics from a more mature point of view, stressing a higher degree of performance, greater personal responsibility as a member of a family, and the acquisition of high moral standards and ideals. The older teenagers are approaching adulthood in physical growth, and should be guided toward maturity in mental and emotional development. Problems in home and family living are many and varied, ranging from poor housekeeping techniques to personality clashes, and often so inextricably intermingled that a successful solution seems impossible. The best solution, of course, is to prevent such situations from arising. A well-rounded home economics program will include opportunities for this kind of learning.

This book has a rich content concerning the many phases of home living, which gives students the opportunity to learn and grow wider in this field of vital human experience. Because of the broad scope of home economics, its study is a challenge to all. The arrangement of topics in the book is flexible, making it possible either to begin anywhere in the book or with the first chapter.

McGUFFIN, LEE. *Swords, Stars, and Bars*. New York 10: E. P. Dutton and Company, Inc., 300 Fourth Avenue. 1958. 160 pp. \$2.95. Here is the story of the Confederate Cavalry generals who won their battles but lost a war. Theirs was not the age of guided missile, armored tank, or giant bomber. It was the age of the last great cavalymen whose thin gray lines stretched from the green hills of Virginia to the mountains of Arkansas. Here is jaunty Jo Shelby riding with a black bear cub on his gun caisson, giant Bedford Forrest arresting his own son, dashing John Mosby capturing a Union general in bed, John Hunt Morgan digging his way out of a Federal prison, and laughing Jeb Stuart who could sing while bullets marked his path.

These were not supermen. Many were not professional soldiers. They had untrained troops, inferior guns, and a dwindling supply of horses. Yet, against tremendous odds, they fought with ingenuity and endurance. The final victory was not theirs. Yet, a century later, they are remembered by all Americans. "They were bound together by an enduring scarlet thread of courage. They were united by an honest belief in a lost cause." These are the "pistol-hearted horsemen under the hot stars" who drew their swords for the Stars and Bars of the Confederacy.

McLELLAND, ISABEL. *Ski Cabin*. New York 17: Henry Holt and Company, Inc., 383 Madison Avenue. 1958. 191 pp. \$3. "An umbrella inside out means a great change in the life of its owner," a young man said to Eileen Blair. And he was right—a great change did come to Eileen after her umbrella collapsed in a Vancouver storm.

Like any girl who loses friendships by moving to another city, and has a job where she doesn't meet people, Eileen was lonely. Then Bronwyn Oliver, a pretty girl on a work-holiday from New Zealand, comes to work at the law offices of Buchanan and MacRae where Eileen is a secretary. Soon Eileen invites Bronwyn to ski at nearby Grouse Mountain. There they meet Jerry

from the office who introduces them to a crowd of young people who come up every weekend. What fun if she and Bronwyn could rent a cabin and do the same! How Bronwyn and Eileen find romance and a gay social life in their new surroundings, and enjoy the challenge of their career jobs makes a realistic and very enjoyable story for teenage girls.

MILLER, EUGENIA. *Deadline at Spook Cabin*. New York 17: Henry Holt and Company, Inc., 383 Madison Avenue. 1958. 160 pp. \$2.75. "Mitch Adams on time . . . Now there's news!" teased Mr. Joe the pressman at the *Westvale Journal*. Then twelve-year-old Mitch explained. 'To win the newsboy prize money so he could buy a new bike he'd have to deliver his papers on time.

One day during the contest, Jim McCain, Mitch's idol of a reporter, called Mitch to the editorial office. Scared he'd done something wrong again, Mitch was all the more thrilled with Jim's good news. Jim was going to let him check the fire departments for news, just like a real reporter!

Adventures followed quickly. One day on a picnic, Mitch and his friends discover a deserted hut they name "Spook Cabin." On his return, Mitch learns of an exciting newsbreak. Mitch's ingenuity in following up a lead ends in a wild scramble to meet a newspaper deadline. How Mitch finally earns the title "Scoop Adams" makes enjoyable reading for any 9- to 11-year-old.

NEWELL, H. E., JR. *Guide to Rockets, Missiles, and Satellites*. New York 36: McGraw-Hill Book Company, Inc., 330 West 42nd Street. 1958. 66 pp. \$2.50. Rockets shooting for the moon, guided missiles, and satellites spiralling around the earth have filled the newspaper headlines ever since Sputnik, Explorer, and Vanguard went into orbit. Now that launchings are frequent and rockets are made of combining parts or "stages" developed by different sections of the armed services, it is difficult for the average citizen to keep informed without an easy identification book.

In this dramatic picture guide, the author gives a capsule view of the history, development, and use of all the rockets and missiles in service today. The working principles and the important technical terms needed to understand them are explained carefully in his introduction. His book is concerned mainly with our own vehicles and weapons, but there are also facts about the Sputnik, the tiny Japanese Pencil rocket, and rockets developed in connection with the International Geophysical Year.

NORMAN, CHARLES. *The Magic-Maker: E. E. Cummings*. New York 11: The Macmillan Company, 60 Fifth Avenue. 1958. 416 pp. \$8. This perceptive biography of one of the twentieth century's most original poets is an important literary event. For the first time to anyone, Cummings has permitted Charles Norman—a friend of many years—complete access to his invaluable family papers and correspondence. From these and from wide and intensive research the author has created an exciting narrative, tracing the life and development of an outstanding creative genius. Cummings emerges as a major figure, highly controversial and influential, in the literary and artistic life of our time—a kind of modern Thoreau, as close to Nature, but with a mind as closely attuned to today's scientific concepts.

This book is a revealing portrait of Cummings the poet and the painter, by a man who is himself a poet and a painter as well as a biographer and critic. It is, moreover, a colorful picture of an era—New York and Paris in the Twenties, many of whose notables are included.



Charles Norman has gained a distinguished reputation as a biographer. In addition to this authoritative and admirable life of Cummings, a book that is bound to be the indispensable source for any future studies of the poet and painter, he is the excellent author of lives of Marlowe, Shakespeare, John Wilmot, Samuel Johnson, and Thomas Griffiths Wainewright.

PHILLIPS, VELMA. *Home Economics Careers for You*. New York 16: Harper and Brothers, 49 E. 33rd Street. 1957. 290 pp. This book is written to acquaint girls with the wide scope of the field of home economics. They will want to know about working conditions of various vocations, salaries, opportunities for professional advancement, advantages and disadvantages, supply and demand. They will want to know how to keep up to date with new positions which are developing. A home economist must know about new developments in housing, which result in many new positions. Home economics is making worth-while contributions in international affairs by raising the standard of living all over the world, thus offering many new vocations. Women's increasing interest in politics and in community and national affairs means additional vocations for home economists. Business firms recognize the need for home economists to interpret the viewpoint of consumers and to help customers more efficiently select and use new products.

This book will open up new vistas for the young home economist. It will interpret the present in the light of past accomplishments and point the way to new developments in vocations. It is also planned to help them make their investment in a college education valuable to themselves and to society. They must know themselves, their desires, their interests, and their abilities.

PLATT, NATHANIEL, and M. J. DRUMMOND. *Our World Through the Ages*, second edition. Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 1959. 755 pp. \$5.36. This book is useful as a basic text for high school or junior college courses in world history, European history, or history of civilization. The important facts of world history in recent years have been organized logically and psychologically under important regions; e.g., Asia, Africa, the Middle East, Latin America, North America, and Europe. Thus, in addition to showing individual nations, the cultural affinity of these nations in their region is described. The relationships and inter-relationships have been stressed to show the unity of world history.

The illustrations in this book are not merely decorative, but are historically meaningful. They include thirty-two pages in full color and Kodachromes illustrating each unit. There are over 500 illustrations, including photographs, drawings, cartoons, time lines, and maps. All of the illustrations are functional and integrated with the text matter. Sequential organization makes meaningful, dramatic lesson planning possible, promotes understanding and learning of basic concepts, and provides wider coverage in fewer pages. The chronological organization can be adapted to a topical approach (see Units 4 and 5). World-wide coverage includes all areas and peoples of the world. The narrative style (p. 109—Hannibal), apt quotations (p. 226—Newton, p. 420—"For oh . . ."), biographical sketches (p. 335—Napoleon I), anecdotes (pp. 78-79—Sparta), touches of humor (p. 267—illustration of 18th century hairdress), smooth transitions (p. 213) all produce a sense of unity and continuity. The reading and vocabulary level have been checked against Buckingham and Dolch and the Flesch Formula to insure maximum readability.



The end of the chapter contains terms to define and persons to identify; questions to check basic information; questions for thought and discussion; individual and group activities to develop creative abilities, skills, and deep understanding; "summing up" activities. The book contains sequential outline (preview) at the beginning of each chapter; challenging questions and captions with many of the illustrations; bibliographies at the end of each unit, with all easy books starred and most annotated; a very full index. Accompanying the text is a *Teacher's Manual and Key*, containing a breakdown of the text into 120 lessons with pointers for the teaching of each lesson; films, filmstrips, and records are listed for each unit; suggestions are given for adapting the study aids to the slow learner. *Tests and Key* contains questions which are comprehensive and of great variety. They test not only information, but also to what extent the higher aims of social studies teaching have been achieved.

PRESCOTT, D. G. *Rough Passage*. Caldwell, Idaho: The Caxton Printers, LTD. 1958. 362 pp. \$5. Eleven dramatic true stories of the sea are recounted in this collection of unusual sea tales. Included is an account of the first attempted mutiny in the United States Navy, a description of the rescue of thirty-two survivors of the *Dumaru* who had resorted to cannibalism, and a retelling which throws new light on the tragedy of the *Titanic*.

In this book, Dana G. Prescott presents the factual evidence pertaining to the riddle of the *Mary Celeste*, which was mysteriously abandoned in mid-Atlantic by its captain and crew, none of whom survived to explain why they had deserted the vessel which later was found to be entirely seaworthy.

The colorful background material in many of these stories, all of which are true and well authenticated, comes in part from actual experiences of the author at sea. He has also gleaned an amount of rare information from private and unpublished sources, and much of his authority derives from the lips of gray-bearded old skippers and men with a lifetime of experience aboard ship who are prepared to tell of unusual adventures, mysterious happenings, and sailormen's superstitions.

On a dark October night in 1939, a few weeks after the outbreak of World War II, a German U-boat crept undetected through the murky waters of Scapa Flow, where the British fleet lay at anchor, and fired two torpedoes into the battleship *Royal Oak*. News of the sinking left the British stunned, for the great battleship, a veteran of the battle of Jutland and reputedly unsinkable, had been torpedoed and sunk at her base, within fortified waters and among the British fleet. The hero of the day, in Germany, was the U-boat commander, Captain Guenther Prien, but in "The Man Who Sank the *Royal Oak*," one of the most gripping stories in this book, the author brings to light the part played by the spy whose activities made this German naval victory possible, but who was never publicly credited for his behind-the-scenes role in the affair.

"Whaler Bound for Hell," a story which took place in the early 1800's, and has for its setting the South Seas, tells of the mutiny aboard the whaleship *Globe*, during a three-year whaling expedition, and is based on eyewitness accounts by two of the *Globe's* crew members.

QUEEN, ELLERY, JR. *The Golden Eagle Mystery*. New York 36: Teen Age Book Club, 33 W. 42nd Street. 1958. 200 pp. 25¢. An exciting mystery story.

REES, DOROTHY and P. K. *Trigonometry*. New York 11: Prentice-Hall, Inc., 70 Fifth Avenue. 1959. 330 pp. \$3.96. The authors cover the usual topics of plane trigonometry and give an introduction to spherical

trigonometry in this book. They present the definitions in terms of abscissa, ordinate, and radius vector in the first chapter and then obtain the special definitions that apply to acute angles of right triangles in Chapter 2. The authors try to maintain a proper balance between analytical and numerical work, but lean somewhat toward the analytical side since that is the part of trigonometry that mathematicians and other scientists need later. In emphasizing the analytical aspects, they keep from giving the student an overdose of analytical work at any time since we have found that students can tolerate only a certain amount of this work without developing mental indigestion. The authors have alternated numerical and analytical work eight times. There is only one place where two chapters of analytical work are given consecutively. These chapters deal with trigonometric equations and inverse functions and are at the end of plane trigonometry.

The problems are given in groups of four, with each problem in the group dealing with the same concepts and of about the same degree of difficulty. Because of this arrangement, a teacher can make a good assignment by giving every fourth problem. Answers are given to the odd-numbered problems. There are some 1800 problems in 49 regular, 13 review, and 13 "test-yourself" exercises. The exercises are so placed that normal assignment for a day comes between each pair of exercises and there is time to spend more than one day on each of several exercises. There is a chapter summary and a review exercise at the end of each chapter.

ROCKOWITZ, MURRAY. *Crosswords for Teen Agers*. New York 36: Teen Age Book Club, 33 West 42nd Street. 1958. 126 pp. 25¢. Fifty crossword puzzles designed with fun in mind. They are based on familiar subjects. Answers are in the back of the book.

RUSINOFF, S. E. *Manufacturing Processes—Production*. Chicago 37: American Technical Society, 848 E. 58th Street. 1957. 570 pp. The shop course has an essential part of the engineering college curricula. However, there has been a trend, due to an increase in technology and a demand for additional cultural subjects, for such schools to revise their curricula, at the same time stepping up the tempo of the entire course. Another factor—the cost of the elaborate machine tools which daily find wider application in industry—makes it virtually impossible to provide examples of these tools for school demonstration, even where time permits. This situation has created a need for a text that will fulfill the requirements once met by field trips and valuable hours spent in the laboratories.

A similar need for a comprehensive text on manufacturing processes exists in industry. Rapid expansion, development and improvement of new machines and methods, and the introduction of new products place a premium on an extensive knowledge of manufacturing processes. The modern trend in the manufacturing industries is to emphasize research in processes and methods, and qualified personnel are always in demand for such positions. The shop foreman, plant supervisor, engineer, or executive will achieve tangible results provided he has an adequate understanding of the basic industrial processes, and is capable of applying this know-how in such a way that his company will benefit.

This text was patterned in a way which would most effectively present the machine tools, fixtures, quality control through statistical methods, and safety programs so important to modern industry. Numerous factors involved in the selection and use of this equipment are thoroughly explained, and special

attention is given to the use of automatic machines. A comprehensive analysis of cutting forces, power, tool life, chip formation, cutting fluids, and tool shape is brought to the attention of the reader (wherever necessary). Each individual subject is covered as a separate unit, thus providing a flexibility which will permit selection or integration of the book to meet a course of study or other requirements. Should additional information be required, an extensive bibliography is provided at the end of each chapter.

SCOTT, A. H. *The Giant Picture Dictionary for Boys and Girls*. Garden City: Doubleday and Company, Inc. 1958. 316 pp. (8" x 10 $\frac{3}{4}$ "). \$3.95. This book has been compiled by Alice Scott, teacher, librarian, and artist. It has been edited by Dr. Stella Center, formerly Director of the Reading Institute, Division of General Education, New York University, one of the country's outstanding pioneers in education. This book includes many words which, though not on standard elementary school word lists, are used by children every day in our mechanized modern world. Every word in the dictionary is defined in terms of the dictionary itself, so that there is no need to refer to any other book for explanation. By the time the child is ready to use more mature reference books, the dictionary habit will be firmly established. A picture book for very young children, a necessary reference book for older children, the dictionary should be in every home and library!

SEABORG, G. T., and EVANS G. VALENS. *Elements of the Universe*. New York 10: E. P. Dutton and Company, 300 Fourth Avenue. 1958. 253 pp. (6 $\frac{1}{2}$ " x 9 $\frac{1}{2}$ "). \$3.95. With the Periodic Table as a unifying theme, this book presents the science of chemistry in a vital new manner to excite curiosity and stimulate the imagination. Early beliefs of the alchemists and subsequent developments over the centuries are dramatically contrasted with recent discoveries in chemistry, including that of element 102. Among the many basic questions answered in lucid detail are: What is an element? How do atoms combine to form molecules and chemical compounds? When and how were chemical elements discovered? How are the elements distributed on earth and in the universe? What is the function of the spectroscope? What is the Periodic Table and how is it used?

As a Nobel Laureate and key co-discoverer of nine of the synthetic elements, Dr. Seaborg describes how he changed the Periodic Table of the elements. The discovery and production of the synthetic transuranium elements are described in detail by the men who discovered them. A number of guest scientists explain various aspects of the chemical elements, such as the structure of organic compounds, the invention of the cyclotron and its use in producing the first synthetic element known to man, the discovery of the first transuranium element and how elements are synthesized in the stars. The team of chemists that discovered mendelevium, element 101, recreates this discovery, including the wild Volkswagon ride from cyclotron to counting lab to "fingerprint" the short-lived element before it disintegrated completely.

Many photographs, charts, and diagrams are integrated with the text to graphically illustrate each point. Written especially for keen young readers, this is a book which all laymen will find of absorbing interest, one which will broaden their understanding of the chemist's role in the probing of our universe.

SIMON, C. M. *A Seed Shall Serve*. New York 10: E. P. Dutton and Company, Inc., 300 Fourth Avenue. 1958. 158 pp. \$3. Against the mystery, the stylized beauty and rigid conformity of Japanese culture at the turn of the century, Western ideas and beliefs began to be etched in sharp relief. To a

people protected for centuries by total isolation, their lives controlled by the formality of an ancient religion and a fierce nationalism, the impact of Western culture was bewildering. Those who came to accept Christianity, embracing its moral concepts, found themselves struggling with divided loyalties, at odds with their families, their friends, their Emperor, and themselves.

This is the portrait of one man, Toyohiko Kagawa, whose life, spanning nearly three quarters of a century, has been dedicated to carrying out his own literal interpretation of the basic precepts of Christianity. Illegitimate, orphaned at the age of four, reared by a bitter step-mother, his father's legal wife, the sensitive, brilliant child developed into the compassionate, idealistic man who has been called the "Schweitzer of Japan."

Living in Japan, the author worked personally with Dr. Kagawa, his relatives, his friends, and the hopeless of the Tokyo slums who have gained dignity and hope as his disciples, to recreate a vivid portrait of the man and his inspiring career.

SMITH, F. S. *Wilderness Adventure*. Skokie, Illinois: Rand McNally and Company, 8255 Central Park Avenue. 1958. 176 pp. \$2.75. Excitement and danger were part of the everyday life of boys who lived in the shadow of Fort Dearborn in 1811-12. But Nat Jenkins and his friend Swift Arrow, son of a friendly Potawatomi Indian chief, had more than their share of both. Young Nat and Swift Arrow had become close friends and Indian blood brothers when Nat was adopted into the Potawatomi tribe. When hostile Indians threaten the fort and kidnap Nat's little sister, Charity, Swift Arrow and the Chief prove their friendship by joining Nat and his father in going to the rescue.

Suspense mounts swiftly as the pursuit of the kidnapers continues day after day, by horseback and canoe, along forest trails and across portages. Together Nat and Swift Arrow prove their courage and daring in freeing Charity. Then comes the long, dangerous trip back to friendly territory, and, in sharing these adventures, the white boy and the Indian learn much from each other.

SPENCER, WILLIAM. *The Land and People of Turkey*. Philadelphia 5: J. B. Lippincott Co., E. Washington Square. 1958. 128 pp. \$2.95. Not many Americans are aware of the fascination of Turkey, a country where East and West, old and new, are found side by side. Turkish history is a tale of violence and romance, of heroes and villains, disaster and triumph. From the medieval invaders who took Constantinople, hounded Italy and threatened all of Europe, down to Kemal Ataturk and the young Turks of our own century, Turkey has played an important part in the development of our civilization. Today, Turkey is an up-to-date, active country which holds a crucial position in the latest struggle of East and West, and the efforts of her leaders to reform the old customs, economy, and social structure are of interest and concern to Americans.

STACKPOLE, E. A. *Dead Man's Gold*. New York 18: Ives Washburn, Inc., 119 West 40th Street. 1958. 220 pp. \$3.25. This is the tale of young Andy Bunker's quest for the gold his great-uncle had hidden years before in a sacred temple on an island while on a whaling voyage in the South Pacific. Andy knew little of the matter except the magic words "Nan-Matal" and "mirage" that his great-uncle had whispered as he lay dying at the Bunkers' Nantucket home in 1827. He also managed to charge Andy with the task of finding Peter, his half-native son, whom he had left on the mysterious island when he sailed back to Nantucket on his last voyage.

Andy, who had always wanted to ship aboard a whaler, was now fired with the plan as his only chance to search for the island. When his family arranged for him to sign as ship's boy on the whaler *Reaper* in the hope he would stop dreaming of his island, Andy instead felt he had taken the first step toward his goal. The story of his eventful voyage on the *Reaper*, his meeting with Tongo Jim, faithful shipmate of his great-uncle, and all the high adventure that accompanied his effort to locate Peter and the sacred temple is told against a background rich in material about sailing ships and the color of the South Seas.

STEARNS, MARSHALL. *The Story of Jazz*. New York 22: New American Library of World Literature, Inc., 501 Madison Avenue. 1958. 284 pp. 50¢. The author discusses the pre-jazz influences of blues, minstrels, spirituals, and ragtime; the jazz of the twenties and early thirties; the more recent eras of swing, bop, Afro-Cuban dance music; and rock 'n roll. He also discusses the styles that developed in New Orleans, Chicago, New York, St. Louis, and Kansas City, accenting his account with personality sketches of the great jazz artists.

STOLZ, MARY. *To Tell Your Love*. New York 36: Teen Age Book Club, 33 W. 42nd Street. 1958. 224 pp. 25¢. In the long summer days, Anne, seventeen, discovers love wears many faces for her, her sister, and her best friend.

THOMSON, PETER. *Rookie Reservist*. New York 16: Dodd, Mead and Company, 432 Fourth Avenue. 1958. 221 pp. \$3. This book for all young men planning to enlist in the United States Army has been written with intimate knowledge and deep understanding by a man who has given his country twenty-two years of willing service as an officer in the Army Reserve. Peter Thomson says:

"Our country will never be an aggressor, so ours is the difficult task of being constantly vigilant and obviously prepared to defend everything that is worth while to us. I have associated with many soldiers and have yet to meet one of any rank who liked war. Neither can I remember having met one who faced enemy fire regretting even the toughest training he had experienced. The finest natural athlete would make a very poor showing in the Olympic Games without training and coaching. War is no game and there is far more at stake for the soldier than a gold medal. Ask any combat soldier.

"But the life of a soldier is not grim. Take any group of healthy young American males and throw them together in any army unit, and whether the time is 1776 or right now, there will be plenty of excitement, adventure, and humor. I have tried to develop all of these elements in this factual career story, but my constant aim has been to show what life is like for the modern reservist in the new army."

TOWNSEND, GILBERT, and J. R. DALZELL. *How To Plan a House*, third edition. Chicago 37: American Technical Society, 848 E. 58th Street. 1958. 600 pp. It is true that an architect can plan your house for you. And if you are fortunate enough to be able to consult one, you should do so. But a preliminary reading of this book will enable you to explain, clearly and intelligently, what you want in your house and will also help you to visualize the architect's intention and to determine whether or not each detail complies with your ideas and your taste. The book is also written in a practical as well as authoritative manner so as to be of interest and value to the men who build houses, to those who develop real estate additions and subdivisions, and to

apprentices and students who desire basic and authoritative information on planning.

For use in schools, the book has been planned to provide a complete course in design in the residential field. In addition, many chapters of the book can be used profitably as supplementary material for specialized studies in building, such as architectural drawing, architectural detailing, and structural design. Both questions with answers and quiz questions enhance the instructional value of the book.

This book is not just another book on house planning. It does not merely present plans; it shows how such plans are made, with the factors involved in every decision which help shape those plans. It takes you through the preliminary planning, omitting no important consideration that goes into the making of decisions about architectural style and all the other items of architectural planning that go to make up a house. A study of these sections will equip you to make these decisions on sound principle, rather than on attractive sales literature or aggressive salesmanship.

The popularity of building design is much like the popularity of many other purchasable items—changeable. It is certain, however, that there are excellent practical reasons why there has been a change in the popularity of house design as evidenced by the homes built today.

This change in the public's taste, as evidenced by the change from the larger to the smaller, more compact house, is recognized by the authors. In order to reach those people who have proved that they want the less expensive, attractive, one-story house, the authors emphasize up-to-date developments in this revision of their text.

The book begins with a discussion of architectural styles. Next, starting with the foundation, it works through every part of the structure, giving illustrative examples at each step, so that the reader becomes thoroughly acquainted with general design principles and practices. An illustrative example, based upon the principles of the book, helps to make all these steps clear.

VANCE, MARGUERITE. *Song for a Lute*. New York 10: E. P. Dutton and Company, Inc., 300 Fourth Avenue. 1958. 160 pp. \$2.95. In the intervening centuries, the tensely dramatic story of Anne Neville, youngest daughter of the Duke of Warwick, Kingmaker, has been obscured by the controversy over the character of her husband, King Richard III. Based on an understanding interpretation of historical facts, the author has written the touching love story of two young people, trapped by the events of the bloodiest chapter in England's history.

The lovely, fragile Anne was fourteen when she became a bewildered pawn in the political chess of Europe in the 1400's, during the War of the Roses. Haunted by a sense of guilt, she watched her father enmeshed in schemes he could no longer control and labelled a traitor before his ignominious death. But from early childhood through the turmoil of war and bloody intrigue, an unfortunate marriage forced on her by circumstances, a frightening abduction when, disguised as a scullery maid, she became lost to her friends and family, Anne remained steadfast in her love for Dickon, her cousin Richard, Duke of Gloucester. A turn of fate allowed them to marry, gave them an adored son whom they lost, and brought them the dubious honor of becoming King and Queen of England. Anne's death left Richard a haunted, broken man, who three years later rode headlong to his destruction in the battle of Bosworth Field.



van der POST, LAURENS. *The Lost World of the Kalahari*. New York 16: William Morrow and Company, Inc., 425 Fourth Avenue. 1958. 289 pp. \$4. The author's unique knowledge of Africa, of its people; his uncanny perceptions, his sensitivity, his narrative skill—all the qualities we have come to associate with the man and his writing are brought together in this book. Here is adventure in its most exalted sense. The expedition itself is immediately exciting, but, in its spiritual sense, it has meaning profound and long-lasting.

The author's roots lie deep in South African soil. He learned the legends of the Bushmen from his grandfather, and from the two aged Bushmen who were servants in his childhood home. From boyhood, he dreamed of one day finding the last survivors of this vanished people and, in 1957, the dream came true. He organized an expedition, the B.B.C. in London commissioned a film of the trip, and—with his close friends Ben Hatherall and Wyndham Vyan—he set out for the Kalahari Desert in Bechuanaland.

Physical difficulties were increased by unexpected floods, swamps where dry land should have been, native superstition, and unrest. Even Samutchos, a prophet among his people and himself of Bushman blood, was hard put to find the little people they were seeking. Their search was filled with incident. Death from stampeding buffalo, from hunger, from mutiny, were all at times possibilities. But the courage and wisdom of their leader brought them through. Finally, a small community of Bushmen were discovered, friendship established, and the van der Post party had the rare experience of participating in their extraordinary and primitive way of life, drinking at the Sip Wells, hunting the fabulous eland bull.

VERNE, JULES. *The Mysterious Island*. New York 16: Dodd, Mead and Company, 432 Fourth Avenue. 1958. 512 pp. \$3.50. Five men are trapped aloft in a runaway balloon. By a desperate chance, four of them succeed in landing together on a lonely Pacific island where they set up a new world of their own. Not the least surprising episode in this amazing adventure is the appearance toward the end of the book of the Great Unknown, whose identity is the best guarded secret of the island over which he is master. This new edition contains sixteen full-page illustrations of the author and his environment and reproductions of pictures from early editions of the book, together with a special introduction and descriptive captions by Anthony Boucher.

VITRAY, LAURA. *Celia, Country Reporter*. New York 16: Dodd, Mead and Company, 432 Fourth Avenue. 1958. 221 pp. \$3. Celia Markuson, daughter of a noted newspaper correspondent, thought her own chance of a career in journalism had ended when she was suddenly catapulted out of her beginner's job on a Washington, D. C., newspaper into a small New Hampshire town, where, she felt sure, "nothing ever happens." But Celia learned that wherever there are people, there is news worthy of the reporter with vision and writing skill.

How Celia acquired the tools of her profession from an experienced editor on a country paper, and how she grew in character and understanding, is the substance of this story. Two teenage boys help to stimulate her interest in the contrasting aspects of a newspaper that she might have missed in a large city. They are the publisher's son and the son of the foreman of the composing room. They also bring dates, outdoor fun—and rivalries!

WHITE, W. B. *Neighbors in Space*. Skokie, Illinois: Rand McNally and Company. 8255 Central Park Avenue. 1958. 63 pp. Paper, \$1. This book is



designed to help the reader learn about the sky without the use of a telescope. Starting with the North Star, the reader proceeds through the constellations in an orderly manner. After a few nights of clear sky and a careful study of the book, the learner soon becomes familiar with the sky.

WOODY, R. J. *Young Dancer's Career Book*. New York 10: E. P. Dutton and Company, 300 Fourth Avenue. 1958. 185 pp. \$3.50. This is the most important book a young dancer can own. It is guide, counselor and critic! Provocative and challenging, it offers tried and trustworthy advice with wit and imagination.

Written by a successful professional dancer, author, and editor, it speaks with authority on subjects of the greatest importance to young dancers. From how to evaluate one's own talent to how to get a Ph.D. in modern dance is clearly outlined in simple language. How much education a dancer really needs, how to train for the classic ballet, choreography for modern dance, how to get a job, what guild to join on becoming a professional, and countless other pertinent questions are answered at length, not only by the author, but by such famous dancers and teachers as William Christensen, Professor of Ballet at the University of Utah, David Preston, Professor of Ballet at Texas Christian University, Martha Hill, Head of the Department of Dance at Juilliard School of Music, and Eleanor Lauer, Chairman, Convenor School of Fine Arts and Director of Dance at Mills College.

A complete picture of job placement and salaries in dance in education is given by Professor Richard Kraus, Director Interdivisional Program of Dance at Teachers College, Columbia University. Labanotation is explained by Ann Hutchinson, President of the Dance Notation Bureau. Marian Chace, herself a pioneer in Dance Therapy at Saint Elizabeths Hospital in Washington, D. C., opens this new field to the young dancer interested in serving humanity.

Unique, factual, stimulating, this comprehensive, well-documented book for young dancers will be indispensable to student, parent, teacher, and guidance director, as well as to all young people considering a career in the dance.

YATES, ELIZABETH. *Pebble in a Pool*. New York 10: E. P. Dutton and Company, 300 Fourth Avenue. 1958. 284 pp. \$3.50. This is not a stereotyped biography, but a significant living through the years with a remarkable person—Dorothy Canfield Fisher—writer, educator, wife and mother, great American, friend to the world. Interpreted for young people with the amazing skill and rare understanding of a Newbery Award author, this is a vibrant moving portrait which will appeal to all perceptive readers.

Here are the broad streams that flowed into Dorothy Canfield's early life from the influence of her academic father and artistic mother, from travel, reading, country living, from contact with the wisdom and hard thinking of older people. Here is her marriage to John Fisher—one of the most moving of modern romances—revealing the creative aspect of love in the lives of two individuals. Here are the years of work, and the golden richness of long and well-deserved fulfillment.

This is a warmly intimate story of a woman who has known the brimming cup, the deepening stream and the seasoned strength of life; a story told against a background of Vermont's peculiar strengths and beauties and a circle of unique experience, which widened to include the world.

YOHANNAN, J. D., editor. *A Treasury of Asian Literature*. New York 22: New American Library of World Literature, Inc., 501 Madison Avenue. 1958. 432 pp. 50¢. A comprehensive selection of the songs, stories, dramas,

and scriptures of the great Asian cultures, a collection from the classics of more than 2500 years, encompassing the literature of China, India, Arabia, Iran, and Japan and of the world's major religions.

YOKOBSON, H. B., editor. *Beginner's Book in Russian as a Second Language*. Washington 6, D. C.: Educational Services, 1730 Eye Street, N.W. 1958. \$2. This book uses the visual approach to the study of Russian. For the student who is being introduced to the new language, the unfamiliar sound becomes identified with the picture of a familiar object. Within the framework of the material given in this book the student acquires: (a) a basic vocabulary related to his immediate needs and interests; (b) an understanding of the basic grammar structure of the language; (c) a foundation and a frame of reference for his future studies.

Each lesson unit in this book proceeds from the pictures of separate objects, to pictorial groupings of these objects expressed in meaningful sentences. These pattern sentences serve as models for the student who gradually learns to apply the given pattern, and thus constructs sentences of his own. By observing that different words perform different functions as they are grouped together to convey meaning, the student is introduced to the grammatical concept and begins to understand the structure of the new language. A composite picture at the end of each lesson unit serves as an aid to vocabulary recall, with the eye of the learner helping him to recall the sound.

The teacher may use one or a combination of methods and techniques in using this book. The easy learning progression from the sound-picture and printed symbol to picture identification should help the student acquire the necessary language skills: understanding, speaking, reading, and writing.

The second part of this book introduces the student to Russian script and Russian stories, both conversational and descriptive, based on the pictures appearing at the end of each lesson unit. The testing of the student's comprehension is accomplished with a series of questions after each story. An English-Russian Glossary is included at the end.

### Pamphlets for Teacher-Pupil Use

BERGSTROM, A. J., compiler. *The Sports and Recreational Programs of the Nation's Universities and Colleges*. Kansas City 5, Mo.: The National Collegiate Athletic Association, 209 Fairfax Bldg. 1958. 21 pp. Contains the results of an extensive survey of the intercollegiate athletic, physical education, and recreational programs of the member institutions of this Association. The study was undertaken by the NCAA Committee on Youth Fitness to measure the scope and resources of present programs and, in particular, to determine their adequacies in light of tomorrow's needs.

BILGER, A. E., editor. *A Decade of Progress*. Salina, Kansas: Salina Public Schools. 1958. 22 pp. The annual report of the superintendent of schools in which are included some historical aspects of the last ten years, plans for future development, and an explanation of the present program. An attractive and interesting booklet.

*Bulletin of the Science Materials Center*. New York 3: Science Materials Center, 59 Fourth Avenue. 1958. 24 pp. Free. Surveys the field of available equipment, records, books, etc. and describes those items deemed worth while by the library of Science. All items listed are priced and may be purchased from this one source—The Science Materials Center.

*Can I Be a Scientist or Engineer?* Detroit 2: Educational Relations Section, Department of Public Relations, General Motors Corporation, General Motors Technical Center, P.O. Box 177-North End Station. 1958. 24 pp. Free. This booklet describes briefly what scientists and engineers do and what the opportunities are for science and engineering graduates. Suggests some specific subjects a student might profitably study while in high school to prepare himself for the study of science and engineering in college. Counselors, teachers, and others responsible for the counseling of young people will find this booklet helpful in their work, especially with students just entering high school.

*Classroom Teacher Salary Schedules, 1958-59, Urban Districts 100,000 and Over in Population*, Research Report 1958-R3. Washington 6, D. C.: National Education Association, 1201 Sixteenth Street, N. W. 1958. 28 pp. 25¢. Presents information on minimum and maximum salaries for classroom teachers in the larger urban school systems. This information should be useful to teachers associations, school administrators, boards of education, and others who are seeking to improve the public schools.

*Directory of Accredited Institutions and Criteria*. Washington 9, D. C.: The Accrediting Commission for Business Schools, 2400 Sixteenth Street, N. W. 1958. 28 pp. Free. Includes the official list of business schools accredited by the Commission, and the Criteria for Accreditation.

*Education in Family Finance*. New York 22: National Committee for Education in Family Finance, 448 Madison Avenue. 1958. 16 pp. Free. A progress report on the first decade of the *Education in Family Finance* program which is sponsored and directed by the National Committee for Education in the Family Finance with assistance from the Institute of Life Insurance.

FAY, L. C. *Improving the Teaching of Reading by Teacher Experimentation*. Bloomington: Indiana University Bookstore. 1958 (September) 112 pp. \$1. Presents descriptions of reading experiments being carried on by more than 300 elementary and secondary teachers in Indiana and its neighboring states.

*Free and Inexpensive Learning Materials*. Nashville, Tenn.: Division of Surveys and Field Services, George Peabody College for Teachers. 1959. 256 pp. \$1.50. This publication is the ninth in a series of editions. It is designed to help the teacher, pupil, and librarian to collect current sources of information. It contains 4,018 entries, 34 per cent of which are revised or new entries. Furthermore, 776 entries in the last edition were eliminated because the materials were out of print, in short supply, or out of date. With few exceptions, nothing is listed which costs more than 50 cents. Each title is annotated and is followed by the complete address of the distributors. Each pamphlet, poster, picture, chart, and map was selected after it was examined and evaluated. The entries are classified under about 300 common subject headings with extensive cross references.

FREEMAN, W. S. *CRS Audio-Visual Catalog*. Brooklyn 13: Children's Reading Service, 1078 St. John's Place. 1958. 64 pp. The ninth annual edition of an annotated list of phonograph records available for 1959. It presents approximately 1,000 carefully chosen phonograph records and filmstrips from many manufacturers. Listings are arranged by subject area and grade levels suitable for use in kindergarten through college level and covers such categories as square dancing, language arts, rhythms, social studies and science—among others. All the teaching aids listed in this catalog, as well as those not listed,

may be secured *at the best school prices from the central ordering service of the Children's Reading Service Audio-Visual Department*. This service enables schools to combine all purchases into one order for one shipment and one invoice. Copies of this new catalog are available free to teachers, librarians, principals or superintendents, if requested on official letterheads—otherwise 25¢ in coin or stamps.

*High Spots in State School Legislation Enacted January 1–August 1, 1958.* Washington 6, D. C.: Research Division, National Education Association, 1201 Sixteenth Street, N. W. 1958. (September). 28 pp. 25¢. Discounts: 2-9 copies, 10%; 10 or more copies, 20%. This annual report includes legislation affecting education reported by 18 states.

*How You Can Search for Science Talent.* Washington D. C.: Science Clubs of America, 1719 N Street, N. W. 1958. 24 pp. Free. A book of facts about the Eighteenth Annual Science Talent Search for Westinghouse Science scholarships and awards.

*The Junior High School.* Washington 6, D. C.: National Education Association, 1201 Sixteenth Street, N. W. 1958 (November). 21 pp. One copy free. This is one of the 15 Research Memos issued by the Research Division of the NEA during 1958. Discusses its purposes, functions, status, and trends; also includes a bibliography. It reports that 44% of 2,438 urban school districts from 2,500 population and over have junior high schools.

KVARACEUS, W. C. *Juvenile Delinquency.* Washington 6, D. C.: Department of Classroom Teachers of the National Education Association, 1201 Sixteenth Street, N. W. 1958. 32 pp. 25¢. The author draws from research material on juvenile delinquency the items which promise to be of most help to the classroom teacher. This is number 15 of the Department's series of pamphlets on what research says to the teacher. Also available from the same source and for the same price is No. 16 of the series: *Parent-Teacher Relationships* by Irving W. Stout and Grace Langdon.

LODGE, HENRY CABOT. *You and the United Nations, 1958-59.* Washington 25, D. C.: Superintendent of Documents. 1958. 52 pp. 25¢. Our representative to the U.N. answers 24 questions about the U.N. Also available from the same source is *The United Nations: The Road Ahead* (1958, October, 20 pp. 15¢), and address by Francis O. Wilcox of The U.S. Department of State.

LOVENSTEIN, MENO. *Economics and the Educational Administrator.* Columbus 10: College of Education, Ohio State University. 1958. 181 pp. \$2. This monograph, published by the College of Education, Ohio State University, in co-operation with the Joint Council on Economic Education, presents an economist's view of the economic understanding of school administrators. In addition analyzing the literature in economics prepared for school administrators, the author postulates a solution to the problem.

*Mathematics and Science in U. S. Public Schools.* Washington 25, D. C.: Superintendent of Documents. 1958. 101 pp. 65¢. A report of a conference sponsored by the American Association for the Advancement of Science, the American Association of School Administration, the Scientific Manpower Commission, and the National Association of Secondary-School Principals, in cooperation with the U. S. Office of Education.

MOORE, B. M. *Juvenile Delinquency Research; Theory, and Comment.* Washington 6, D. C.: Association for Supervision and Curriculum Develop-

ment, 1201 Sixteenth Street, N. W. 1958. 76 pp. \$1. Provides a reliable and useful source of information to help schools assume their role as wisely as possible in regard to the problem of juvenile delinquency. Useful to school personnel seeking better solutions to the problem of preventing and alleviating juvenile delinquency. Also available from the same source is the 88-page booklet, *What Does Research Say About Arithmetic?* by Vincent J. Glennon and C. W. Hunnicutt. This booklet brings up to date the 1952 edition on the findings of research and speculative inquiries.

*The Problem of National Security—Some Economic and Administrative Aspects.* New York 22: Committee for Economic Development (CED), 711 Fifth Avenue. 1958. 58 pp. plus 5 charts. 75¢ each with special arrangements for quantity orders and for classroom or other educational use. CED's Research and Policy Committee considers the question of how much the American people should be willing to spend for security, as well as other questions relating to various economic and administrative aspects of the over-all problem of national security. Also available from the same source is a 27-page pamphlet (50¢) which presents in brief form the substance of the CED statement on national policy entitled *The Problem of National Security*.

*Questions on Disarmament and Your Job.* Washington 2, D. C.: Friends Committee on National Legislation, 104 C Street, N. E. 1958. 16 pp. 10¢. Prepared to stimulate thinking on the economics of disarmament, and to indicate some avenues of approach which could help to ease the transition.

RAW, A. H. *Drawing for Good Reproduction.* Washington 6, D. C.: National Association of Blueprint and Diazotype Coaters, 1757 K Street, N. W. 1958. 32 pp. (8 $\frac{3}{4}$ " x 11"). \$1 each for 1 to 5 copies, 90¢ each for 6 to 10 copies; 80¢ each for 11 to 25 copies, 70¢ each for 26 to 50 copies, and 60¢ each for 51 or more copies. The purpose of this publication is to create an awareness of the importance of good drawing to good reproduction. Helpful for school journalists.

*Report on Higher Education in the Soviet Union.* Pittsburgh, Penna.: University of Pittsburgh Press. 1958. 32 pp. A report prepared by the heads of a number of American educational and research institutions.

SPRY, J. C. *Civil Service and the Citizen.* Washington 25, D. C.: Superintendent of Documents. 1958. 44 pp. 35¢, with 25% discount on orders of 100 or more. *One copy free to a school.* This is a high-school study unit on the Federal Civil Service. It is about the two and one-third million civil servants who work to make the operations of the Federal government a daily reality. The unit describes who they are, what they do, the system that employs them, the many services they provide us, and how they are selected from the ranks of the citizenry.

*Statistical Report.* San Diego 3, California: San Diego Unified School District, Education Center, Park Boulevard at El Cajon. 1958. 22 pp. This report, the fifth in an annual series, shows in some detail how budget funds were spent for personnel, services, and facilities. An excellent presentation in a handy pocket edition.

*Student Financial Aids.* Laramie: University of Wyoming. 1959. 32 pp. A checklist of financial aids available at the University of Wyoming, including scholarships, loans, employment.

*Summer Scholarship Program for High-School Juniors 1958-59*, second report. Louisville: College of Arts and Sciences, University of Louisville. 1958. 60 pp. Under a grant from the Carnegie Corporation of New York, the University of Louisville has completed the second year of a 5-year program of summer work for high-school juniors. This publication presents a report of a follow-up on the students who participated in the 1957 program and a preliminary report on the 1958 summer program involving 13 high schools.

*The Thirty-first Season of the National Music Camp*. Ann Arbor, Michigan: National Music Camp, University of Michigan. 1958. 118 pp. A program booklet recording the achievements of the 1958 National Music Camp campers and serving as a means of acquainting prospective NMC campers with the standards of accomplishment expected of students at the Camp.

WISE, W. M. *They Come for the Best of Reasons—College Students Today*. Washington 6, D. C.: American Council on Education, 1785 Massachusetts Avenue. 1958. 78 pp. \$1. This book reflects the belief that, if those who are concerned with higher education keep their eyes on the student with his individual capabilities and limitations, the quality of higher education will improve.

*World in Turmoil: Realities Facing U.S. Foreign Policy*. New York 17: Foreign Policy Association, Inc., 345 East 46th Street. 1958. 32 pp. 50¢. Suggests that the answer "still depends on the efforts of the mind and will of the educators, organizations, and those responsible for the communication of news."

After a brief review of the 40 year period since World War I, the document analyzes "six major revolutions simultaneously taking place in the world today." These changes, constituting the "realities facing U. S. foreign policy," are: (1) non-Western nationalism, with its accompaniment of anti-Westernism; (2) new technology and the "revolution of rising expectations" among under-developed peoples; (3) the population explosion, with its economic and political consequences; (4) the economic and social revolution, which telescopes, in non-Western nations, changes which took 400 to 500 years in the West; (5) the revolution in weaponry, which threatens for the first time the possibility of universal destruction; and (6) the emergence of a world community, through the United Nations and other international agencies.

*Youth Fitness Test Manual*. Washington 6, D. C.: American Association for Health, Physical Education, and Recreation, 1201 Sixteenth Street, N. W. 1958. 64 pp. 50¢. A guide for teachers in administering the AAHPER Youth Fitness Test battery of seven test items and using the results for planning programs to improve the fitness of youth.

*Young Workers Under 18, Today and Tomorrow*. Washington 25, D. C.: Superintendent of Document. 1958. 28 pp. 20¢. A chart book picturing broad national trends and patterns of youth employment from 1947 to 1957 and suggesting the direction of future trends.



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## News Notes

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### THE NASSP STAFF UTILIZATION STUDY AND THE NATIONAL DEFENSE ACT OF 1958

The NASSP Staff Utilization Study includes a variety of experimental projects. All of them are related to an effort to improve instruction and to raise the level of the standards for the teacher. The studies, for example, included such subjects as mathematics, science, foreign languages, typing, driver education, etc. The passage of the National Defense Act of 1958 during the last day of the 85th Congress offers opportunity to schools to further such studies as these. Title III and Title VI provide funds for laboratory and other special equipment for use in the teaching of science, mathematics, and foreign languages—including the expansion and improvement of supervisory or related services. Title V of the Act provided funds for guidance, counseling, and testing, while Title VII provides funds for experiments with audio-visual media.

### INFORMING THE PUBLIC

Philo C. Dunsmore, superintendent of the Toledo, Ohio, public schools, and the Board of Education, charged with the task of educating all children of varying backgrounds and abilities and believing that a school system must decide what are the most important things that can be taught them in a democratic nation, have prepared material in text and pictures as a means of informing Toledo citizens how this is being done in their public schools. This material appeared as a 16-page supplement of the *Toledo Sunday Blade*, October 12, 1958. Presented in color, this attractive magazine section stresses that the most important ability that the school can develop in its pupils is the ability to think. The pictures of school activities and their captions show what learning to think mean as pupils progress from kindergarten through high school. They show what a pupil is taught and how he learns. Included also are pictures of some of the districts most recently built schools and the annual financial report for 1957. This report is broken down into items showing from where the money comes and how it is used. The information included in this magazine section was prepared and paid for by the Board of Education as one of its public relations activities.

### ELEMENTARY-SCHOOL PRINCIPAL'S 1959 YEARBOOK

Physical facilities for elementary schools will be the subject of the Department's Thirty-Eighth Yearbook, scheduled for release in September 1959. Major emphasis of the material will be on building, equipping, and opening new schools. In addition, there will be suggestions for remodeling and for making the best use of existing facilities. The Yearbook will include material about: relationship of physical facilities to the educational program; role and responsibilities of various persons involved in school; building programs; specific units of the school plant—classrooms, libraries, teachers' lounges, play areas, *et cetera*; equipping a school; legal aspects of school building programs;



safety in the school plant; opening a new school; remodeling; utilizing existing facilities; maintenance of the school plant.

The Department's 1959 Annual Meeting will be held in Los Angeles, California, February 28-March 4. Pre-registration forms and hotel reservation blanks have already been mailed to members. Information about the program appeared in the December issue of their magazine.

#### NEW PAN AMERICAN UNION PROGRAMS FOR SCIENCE

The first of three new programs for scientific development in the Western Hemisphere, the OAS Fellowship Program, has initiated its efforts with awards for training census technicians. The Fellowship students will spend 15 weeks starting August 11, at the Latin American Census Training Center at Lima, Peru. The center was established by the United Nations, the Food and Agriculture Organization, and the Inter-American Statistical Institute of the OAS in cooperation with the government of Peru. The OAS fellows participating in the intensive course will study procedures in compiling population, agriculture, and housing data in preparation for the 1960 Census of the Americas.

The second program to aid scientific development was provided by the OAS Council in establishing funds for direct technical assistance as a part of the Pan American Union's regular program. This will enable the PAU to render direct advisory services in the sciences upon request of the OAS member states.

The third science program consists of the preparatory work for the first meeting of the Inter-American Nuclear Energy Commission, to be held during the first part of 1959. The preparation includes a detailed field survey by scientists of the needs and capabilities for research and training in nuclear energy in Latin America.

#### MARCH OF DIMES SCHOLARSHIPS

The National Foundation will make an unprecedented effort to increase skilled manpower in five of the health professions as a major part of its expanded attack on disease by launching a nation-wide, multi-million-dollar Health Scholarship Program for young Americans, it has been announced by its president, Basil O'Connor. The program, Mr. O'Connor said, represents a "realistic approach" towards solving the dearth of health personnel in the United States by reaching into the nation's schools to select and train disease fighters of the future in five key health fields—medicine, medical social work, nursing, physical therapy, and occupational therapy. The announcement was made at a press conference at the Sheraton East Hotel prior to the opening luncheon of business and industrial leaders of the 1959 March of Dimes campaign in Greater New York.

The National Foundation's new Health Scholarship Program, estimated to cost 12 million dollars in March of Dimes funds over the next 10 years, was characterized by Mr. O'Connor as a logical expansion of the National Foundation's pioneering efforts in the field of professional education. "While the new program is aimed at increasing the number of trained health personnel," he said, "it's major emphasis is to stimulate interest in the broad field of health and to encourage young people to choose careers that count in the welfare of the nation.

Mr. O'Connor stated, "The demand for health personnel is progressively outstripping the supply. Growing medical knowledge and the present popula-

tion explosion make it mandatory for us to step up the pace of our professional education program." Acknowledging the impossibility of presenting the situation statistically in terms of human need, Mr. O'Connor nevertheless cited some "hard figures" as a possible yardstick of measurement. He said that figures supplied by four of the professions included in the Health Scholarship Program revealed an immediate need for: 6,500 more medical social workers, 70,000 more nurses, 7,000 more physical therapists, 10,000 more occupational therapists.

While there is a critical shortage of doctors, Mr. O'Connor said it was impossible to find agreement on the total numbers needed. The ratio to population, however, is declining steadily, with authorities estimating a drop from 132 doctors per 100,000 population to less than 128 per 100,000 in the next 15 years.

"These needs," Mr. O'Connor said, "underscore the purposes of the new National Foundation Health Scholarship Program, the first of its kind ever attempted on this scale. It represents a tremendous March of Dimes investment in human resources. Its secondary purpose will be increased community cooperation in solving problems that arise from critical shortages of professional qualified health personnel." The National Foundation will offer annual Health Scholarships to help provide four years of college or university education in career preparation for five of the key professions: medicine, medical social work, nursing, physical therapy, and occupational therapy.

A minimum of 505 Health Scholarships will be offered each year, the first of them before the end of the 1959 school year. They will be made available on a geographic basis with heavily populated states receiving as many as 25—or five for each of the five professions—and with no state or territory receiving less than five Health Scholarships, a minimum of one for each of the five professions. Of these about 300 will be available to high-school seniors.

#### NEW YORK SCHOLARSHIP EXAMINATION

The New York State Regents Scholarship examination has been changed. The major difference is that all candidates for these scholarships are now required to pass a qualifying test in composition writing. Contestants have always had to write a composition—but now the degree of competence in that piece of writing will determine whether or not the scores in the rest of the examination will be given consideration.

Walter Crewson, associate commissioner of education for the state, explained: "Candidates will be marked 'qualified' or 'unqualified' in the composition question. No candidate who fails to demonstrate minimum competence in writing ability will be eligible to receive a scholarship, regardless of achievement in the objective portions of the test."

There are other changes. The tests are now given in October instead of January, principally because colleges are trying to process their admissions earlier. Since the scores made in a scholarship examination can be an important factor in college admission, the state sets an examination time early enough for papers to be checked and the scores used.

A third important change is that the examination now tries to measure college aptitude as well as high-school achievement. The thought here is that scores on achievement alone sometimes penalize very promising students whose cultural backgrounds have been limited.

All three changes have been made with one thought uppermost: to identify the students who are most likely to succeed in college and to use the information revealed by the tests to the advantage of the students.—*The Senior High School*, White Plains, New York.

### WORLD-WIDE GRADUATE AWARDS

Complete information on how to obtain graduate study funds, ranging from \$200 up to \$10,000, is now available in the second volume of the *World-Wide Graduate Award Directory* (36 pages). Over 250 universities have sent information to be included in this new volume. Among the awards are many that have gone begging in former years because qualified applicants didn't know about them. This guide to graduate study awards is published annually by the Advancement and Placement Institute to provide the needed communication link between administrators of assistance programs and potential candidates. This Directory is the only comprehensive global compilation of graduate awards devoted entirely to American scholars, educators, librarians, scientists, and social scientists. Volume II presents completely new and additional data from Volume I which was published in 1957.

Current information about the fellowships, assistantships, scholarships, loans, prizes, and self-help programs includes candidates' pre-requisites, place of application, and descriptions of the study programs. Copies of both volumes of this book may be examined at many graduate schools, university placement or dean's offices, libraries, or may be ordered from the Advancement and Placement Institute, Box 99H, Greenpoint Station, Brooklyn 22, New York. The price is \$3.00 for each volume or \$5 for the two volumes.

The Advancement and Placement Institute, a non-commercial professional and advisory service in the education field, has been publishing the monthly, non-free teacher placement journal, *Crusade*, since 1952. The Institute also issues the annual *World-Wide Summer Placement Directory*, a comprehensive guide to summer employment for college students and educators.

### PRESIDENT'S COUNCIL ON YOUTH FITNESS REPORTS

Shane MacCarthy, Executive Director of the Council, Washington 25, D. C. announced the availability of the report of the Second Annual Meeting of the President's Council on Youth Fitness held at Fort Richie, Cascade, Maryland, September 7-9, 1958. This report appears under the title of *Fitness of American Youth*. The report was written by the Council staff, utilizing all the material from the Conference, including the recorded tapes, group reports, and personal observations. It is a rather comprehensive presentation including the formal addresses, a summary of findings, and recommendations.

### ROCKY MOUNTAIN AREA WORKSHOP

The Colorado State Department of Education has recently published an 84-page report of its first annual workshop for teachers and administrators in small high schools held at Aspen, Colorado, June 2-6, 1958. Its purposes were to orient new project personnel, to pool knowledge gained from one year of project experience, and to develop forward thinking ideas and blueprints for future project activities.

Although the majority of the 56 participants came from thirteen small high schools of Colorado, there were consultants and speakers from New York City,

Illinois, and California, in addition to those from Colorado colleges, Colorado University, and the State Department of Education.

This report is a direct result of the five days of discussion and work. It is, at present, the closest approach which has been made in the state of Colorado to the development of a handbook of recommended procedures which have particular application to the activities of the necessarily existent small high schools. The report is presented in two major sections plus an appendix. Included in the first section are copies of major addresses which were delivered by the workshop's consultants and resource persons.

The second section of this booklet contains reports of findings of the two groups and four committees whose job it was to draw the first lines of the blueprint for small high-school organization.

### FACTS VERSUS OPINION

The National Education Association has issued a point-by-point analysis of what its Research Division termed "heavily weighted opinion, prejudice, and lack of understanding" contained in a much publicized book by Roger A. Freeman on school needs in the years just ahead. The NEA Research Division charges that the Freeman book contains many "statistical insinuations" which discredit the contents.

The 49-page NEA analysis is titled *Can Our Schools Get by with Less?* It is published by the NEA Research Division for the benefit of educators and laymen who have neither the time nor facilities to evaluate the conclusions presented in the book. It calls attention to unsupported evidence and omissions of important facts and figures.

While the Freeman book, titled *School Needs in the Decade Ahead*, purports to be a factual study of American education, the NEA Research Division states that the book is "dominated by a point of view which governs the author's selection and presentation of facts." That point of view holds that our American public school system is growing too fast, too many of our youth are enrolled in school, too many teachers are employed, too many non-academic courses are taught, and consequently, our schools are too costly. This view, according to the NEA review, is "shortsighted" and, if applied, might be "cheap in terms of tax dollars, but it would be costly in terms of America's growth."

Typical of Freeman's conclusions, which the NEA found to be in direct conflict with the findings of well-known organizations, is the contention that students unable to master a stepped-up academic curriculum be eliminated from the classroom and become the responsibility of agencies other than the schools. This, says the NEA critics, is in direct conflict with the conclusions of the recent Rockefeller report on education and with the conclusions of such outstanding persons as Dr. James B. Conant, president emeritus of Harvard University. A single copy of this NEA analysis may be received on request from the National Education Association, 1201 Sixteenth Street, N. W., Washington 6, D. C.; additional copies 25 cents each with the following discounts: 2-9 copies, 10%; 10 or more copies, 25%.

### STATE DISCUSSION GROUPS REPORT

Charles P. Lindecamp, state coordinator of the Ohio High-School Principals Association (and principal of Garfield Heights High School, 4900 Turney Road, Cleveland 25, Ohio), has recently compiled a 13-page, mimeographed report of the activities of the association's 21 Discussion Groups. This excellent

summary impresses one by the wide variety of topics considered by the groups. The subjects discussed were of real educational importance. The Discussion Groups are a continuation of the special Discussion Group Project started in 1935 by the National Association of Secondary-School Principals. Mr. Lindcamp, in this report states: "It is my opinion that I receive more real, professional help from the Discussion Group meetings than from any other educational meetings which I attend. The informal discussions by relatively small groups composed of experienced high-school administrators often reveal that others have successfully solved problems which I have found perplexing. . . . The time and effort in coordinating the work of the State Regional Discussion Groups have been more than adequately repaid by the active participation of the principals of each Group, the prompt notices and reports of all meetings, the evidences of the discussion of practical topics leading to improved high-school education, and the personal growth experienced in attending the meetings and corresponding with the officers and Regional Coordinators."

Included in the report is a general summary of the meeting, a list of the topics discussed by the groups, a listing of the officers (president, vice president, and secretary) with addresses of each of the 25 Area Discussion Groups, the number of meetings held in each area as well as the attendance count at each meeting, a listing of the countries included in each area, and several letters from the area director.

#### INSTRUCTION IN CITIZENSHIP EDUCATION

Cooperation and teamwork between administration and citizenship education teachers in the Sewanhaka Central High School District is being carried to an even greater extent this year by the in-service teacher meetings on all grade levels of citizenship education. Last year the high-school district instituted a plan providing for an administrator-sponsor to work with a committee from each of the junior high-school divisions of Central High School District No. 2 on each grade level. Robert L. Springer, principal of the district, reports that committees of teachers representing each of the five junior high schools met with an administrator each month and discussed ways and procedures to implement the ten goals set for the schools. The New York State courses of study were studied cooperatively and many projects to improve instruction and in-service training have resulted. The plan was enthusiastically received by the teachers. This year, a plan has been extended to include the senior high-school-grade levels. Administrators work with committees representing each senior high school, sharing ideas and helping to obtain the goals of an outstanding program of citizenship education.

#### NEW AMERICAN HEART ASSOCIATION FILM

A child who has been held back by rheumatic heart disease can, with proper medical supervision and vocational guidance, grow up to normal living and become a useful member of the community. This is the central theme of *Help for Young Hearts*, new motion picture produced for the American Heart Association and its affiliates which tells the story of a teenage girl's struggle to overcome the handicaps of rheumatic heart disease.

The film, which emphasizes the important part medical prophylaxis and vocational counseling can play in helping young people whose hearts have been damaged by rheumatic fever, is being distributed nationally by the Associa-

tion's 57 affiliates and 350 chapters. It will be shown to parents of children with rheumatic fever, PTA groups, teachers, school nurses, guidance counselors, physicians, social and rehabilitation workers, and the general public.

The film points out that parents of the rheumatic fever child may obtain information about protective drugs from their physicians or through local Heart Associations. "Equally important," it says, "is the help a child gets in preparing for a job that will make the most of his abilities."

#### OPERA AND BALLET STORIES

Five famous operas and a popular ballet are brought to the classroom. They give greater appreciation of fine music in a new series of Jam Handy filmstrips in color. The new series, "Opera and Ballet Stories," presents Wagner's *Lohengrin* and *The Mastersingers*; Delibes' *Coppelia* Ballet, *The Magic Flute* of Mozart; Verdi's *Aida*; and Rossini's *The Barber of Seville*. Lively, charming illustrations show the significant scenes from the stories made famous by the great composers.

Available with the filmstrips are six correlated recordings. One side of these narrates the caption of each illustration. The narration is followed by thematic music. The reverse side gives the orchestral rendition of the principal arias of the particular opera. In *Coppelia*, the complete ballet music is played. The filmstrips are equally applicable to music programs in elementary grades and junior and senior high schools. The series is priced at \$28.50. Individual filmstrips are \$4.95. The series of six 12-inch, 33 $\frac{1}{3}$  rpm records is \$21. Individual records are \$3.95. These "Opera and Ballet Stories" filmstrips and records are available from The Jam Handy Organization, 2821 East Grand Boulevard, Detroit 11, Michigan, and from all Jam Handy dealers.

#### GRADUATE FELLOWSHIPS

Fellowships of \$1,000 each for the study of human development and family life for the academic year 1959-60 will be awarded at the Merrill-Palmer School on the basis of merit. Supplemental grants may be awarded to married students on the basis of need up to a possible total of \$3,000. A limited number of fellowships may be extended into the summer for students in the counseling training program. A limited number of larger grants are available to advanced professional persons. Special funds are reserved for fellowships for foreign students.

Fellowships enable the student to study full time such subjects as anthropology, child development, counseling and psychotherapy, education, family life education, home economics, nursing education, physical growth, psychology, religion, social work, and sociology. No employment is entailed in the school in return for the stipend. Holders of fellowships are exempt from the tuition fee and do not pay income tax on the fellowship stipends. All students pay the general fee of \$15 a year. The cost of board and room at the school does not exceed \$600 for the 10-month period.

Educational Grants, covering the tuition fee (\$225 a year) fully or in part, are awarded on the basis of need. Applications for the year 1959-60 are being considered. Early application is advisable. Applications received after March 1, 1959, will be considered in turn for any fellowships still available. Address: The Registrar, The Merrill-Palmer School, 71 East Ferry Avenue, Detroit 2, Michigan, for application blanks, *Announcement of Courses*, and further information.



## VISITING ASSOCIATESHIPS IN TEST DEVELOPMENT

Educational Testing Service will offer two Visiting Associateships in Test Development for the summer of 1959, one in Mathematics and one in Science. The Associateships will give experienced teachers an opportunity to study testing problems in relation to goals of instruction. In their work with the Test Development staff, the Associates will become familiar with testing techniques, and at the same time they will bring front-line experience to bear on the problems of evaluation in nation-wide testing programs. The period is from June 30 to August 28, 1959. A stipend of \$700 and reimbursement for transportation to and from Princeton will be paid.

Applications, to be submitted by February 27, 1959, should include a completed application form and transcripts of all college work, both graduate and undergraduate. Requests for application forms, completed applications, and all inquiries should be addressed to Mrs. W. Stanley Brown, Test Development Division Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.

## MUSIC FELLOWSHIPS

Fellowships, assistantships, and scholarships for graduate study in music at the University of Illinois are available for 1959-60, Director Duane A. Branigan of the School of Music has announced. Fellowships carry stipends varying from \$1,500 to \$1,800 plus exemption from tuition for the academic year and summer session immediately following the period of appointment. Graduate scholarships are for tuition only. Approximately 30 part-time graduate assistantships are available. These vary in amount from \$900 to \$3,500 plus tuition. Candidates must be approved for graduate study before appointment. Applicants for fellowships and scholarships may be considered.

Deadline for fellowship and scholarship applications is February 15, 1959; assistantship applications must be filed by April 1. Applicants in applied music must submit recordings of performances in the major field. Composers must submit scores, also recordings if available. Graduate work in music at Illinois may lead to the Master of Music, Doctor of Musical Arts, Ph.D. in Musicology, Master of Science in Music Education, or Doctor of Education.

## ANNOUNCING TWO NEW FILMS

*Mimeographing Techniques*, a new film produced by Bailey Films, Inc., 6509 De Longpre Avenue, Hollywood 28, California, is designed for showing to teachers, high-school and college students, and office personnel the complete process of typing a mimeograph stencil, from cleaning the typewriter keys to using a mimeoscope for hand lettering. The step-by-step procedure of running off copies on a modern electric mimeograph machine is shown in detail. The manual machine is also demonstrated, with the slip-sheeting process. Mimeographing supplies and equipment are discussed, and many handy tips are given for achieving better mimeographed copies. Also included is a complete demonstration of color mimeographing. This picture is 15 minutes in length.

*Gold and Gold Mining*, a new 14-minute film for upper elementary through secondary grades, is also available from Bailey Films. This is a study of gold mining methods in use today. The simple operation of panning the streams for gold is contrasted with those of companies engaged in hydraulic mining, dredging, and hard-rock mining in open pits and tunnels. Dramatic scenes of each type of mining show the use of water pressure, the function of quicksilver,



the operation of the mill, and how all of the various mining methods utilize similar principles in their efforts to separate the gold from its bed of sand, soil, or rock. Prints of this film and the one above are priced individually at \$150 in color and \$75 in black and white. Rental prints may also be obtained from Bailey Films, Inc. for both.

### SEA CREATURES ON TV

Sea creatures never before filmed in their natural habitat have been captured for the 21-inch screen in a new National Educational Television series for which photographic work has been completed by the University of Miami, Florida, Office of Broadcasting and Film Services. Little underwater denizens like the sea cat, a tiny relative of the octopus, were filmed for *Survival in the Sea*, a series of 12 half-hour programs on the relationships between marine animals and their surroundings. The series, 18 months in production, will be broadcast later over the network of educational TV stations.

*Survival in the Sea* is being produced by the University for the Educational Television and Radio Center under a \$60,000 contract. The Center is headquarters for National Educational Television. While such creatures as the ghost crab, the sea urchin, and the pen shell are principal talent for the series, the man who describes their activities and the nature of their life is Dr. John F. Storr, formerly of the University of Miami Marine Laboratory, now of the University of Buffalo.

### ILLINOIS TO STUDY VOCATIONAL-TECHNICAL PROGRAM

A two-year study of vocational and technical education in Illinois schools is being undertaken by the University of Illinois Bureau of Educational Research for the office of the State Superintendent of Public Instruction. The study, conducted at both high-school and adult levels, will review the entire vocational-technical program as to nature of activities in this category, their organization and financing. Dr. William P. McLure, who is directing the study states, "Although vocational education has been included in the public school program for nearly half a century with courses being added as they seemed to be needed, there has been no recent comprehensive study of these activities on a state-wide basis."

### SCHOLARSHIPS FOR SECONDARY-SCHOOL TEACHERS

Brown University, which has been chosen by the National Science Foundation as one of three New England Institutions to conduct a full-time, academic-year institute for high-school teachers of science and mathematics, has sent brochures to several thousand teachers throughout the country, giving details of the program and inviting applications. The institute, which will extend through the 1959-60 academic year and also include six weeks of instruction during the summer of 1960, is being supported by a National Science Foundation grant of \$321,740.

It will provide a tuition-free year of graduate study for 50 secondary-school teachers of science and mathematics who will also receive stipends of from \$3,810 to \$5,490 each for living and other expenses. Each teacher enrolled for the combined academic year and summer program will receive \$3,600 as a basic stipend, plus a \$420 allowance for each dependent up to four, a maximum of \$160 in travel allowances and \$50 for books.

The institute provides a further extension of Brown's program of service in the training of teachers, which during the past two years has seen establishment of the Master of Arts in Teaching program, an in-service institute for teachers of science and mathematics and the Graduate Summer School for Teachers. Admission to the institute will be limited to teachers in service holding bachelor's degrees or their equivalent, who will have to obtain leave of absence from their schools so as to spend the entire period of instruction at Brown. All who are accepted are expected to meet admission requirements for the university's Master of Arts in Teaching program.

Only six colleges and universities in the east and 32 in the entire country have been selected to conduct institutes of this type next year. Plans for the institute are being handled by a committee which includes Dr. R. Bruce Lindsay, Hazard Professor of Physics and dean of the Brown Graduate School, representatives of the participating departments, and Dr. Elmer R. Smith, professor of education, who will be director of the institute. Application forms and detailed information may be obtained from the director of the institute. Applications must be completed on or before January 15. Successful candidates will be notified by February 20 and acceptances must be received by March 2.

### OCCUPATIONAL OUTLOOK QUARTERLY

The *Occupational Outlook Quarterly* contains up-to-date information for use in vocational guidance. It is issued four times during the school year. It describes existing and new occupations and presents up-to-date information on employment opportunities and earnings in various fields of occupations. It also discusses the kinds of work done, where work is done, and how much education is needed in various types of employment. Many articles related to the work-a-day world are included in each issue. This publication, prepared by the Bureau of Labor Statistics of the U.S. Department of Labor is available at one dollar per year from the Superintendent of Documents, Washington 25, D. C. Also available from the same source is *The Occupational Outlook Handbook* at \$4 per copy.

### MATHEMATICS AND YOUR CAREER

The importance of mathematics in the modern world of work is stressed in a pamphlet, *Mathematics and Your Career*, released by the Bureau of Labor Statistics, U.S. Department of Labor, in cooperation with the Office of Education, U.S. Department of Health, Education, and Welfare. Mathematics and the way of thinking out a problem it teaches are essential for many different kinds of work in this technical age. This book shows students how much mathematics training they will need for a wide variety of occupations, including the skilled trades as well as professional and technical occupations. Teachers, counselors, students, and others interested in mathematics education can obtain a limited number of free copies of this 12-page illustrated pamphlet, so long as the supply lasts, by writing to: Bureau of Labor Statistics, U.S. Department of Labor, Washington 25, D. C.

### GETTING THE FACTS

The first thing any cub reporter is taught is to check his facts before writing a story. Now, no one would call Miss Dorothy Thompson a cub reporter, but there seems to be convincing evidence that she failed to check her facts before

writing that controversial piece called "Must Schools Be Palaces?" It was originally printed in *Ladies' Home Journal* more than a year ago, and was reprinted in October by *Reader's Digest*.

*Architectural Forum*, in its November issue, dug into the story and came up with some facts and figures that Miss Thompson overlooked. The town which Miss Thompson accuses of wastefulness but does not name, says the magazine, is Woodstock, Vt. Apparently the citizens of Woodstock do not agree with Miss Thompson's charge that its tax rate was "being upped beyond the capacity of most parents to pay," for it passed a school bond issue to build the school by a margin of better than two to one.

A palace? The school had a square-foot cost of \$10.80, below the national average for that date, and in an area where the building-cost index is comparable to the national average. The gymnasium, which Miss Thompson described as "worthy of a fashionable athletic club," is really a standard high-school gym, says *Architectural Forum*.

Carl B. Munck, president of the National School Boards Association, recently wrote the *Reader's Digest* in protest to the Thompson article. W. A. Shannon, executive director of the NSBA reports he has had long distance calls, telegrams, and letters from state association leaders who want to order additional copies of the letter. One superintendent in a mid-western state requested 100 copies to help out of "a little trouble." As a result of the wide interest shown in Mr. Munck's letter, Director Shannon has ordered 2500 additional copies for distribution. *Education U.S.A.*, October 23, 1958.

#### NEW UN STUDY FOR TEACHERS

*The United Nations in the School Program* is the title of a study being sponsored this year by the NEA Committee on International Relations. The goal of the study is to produce a textbook which will provide teachers in various grade levels and subject areas with meaningful classroom activities about the UN and its specialized agencies. Through the textbook project, the study aims to help students acquire a basic knowledge of the UN system and encourage teachers to develop new concepts and activities.

An effort now is underway to interest teachers to contribute to the UN study by reporting information for the textbook and by forming workshops and study groups on the UN. State education associations, state offices of education, and non-governmental organizations are being supplied with full details. Their help, as well as the help of NEA departments, is sought in locating teachers who have given effective courses about the UN. Teachers in all subject areas and at all grade levels are invited to report their UN activities to: Committee on International Relations, NEA, 1201 Sixteenth Street, N. W., Washington 6, D. C.

#### THE ASSOCIATED SCHOOLS PROJECT

During the school year 1957-58, there were 122 selected secondary schools and 48 teacher training institutions in 40 countries that participated in the Associated Schools Project. The knowledge gained is shared with other countries through the United Nations Educational, Scientific, and Cultural Organization. The purpose of the project is to encourage schools to carry out experimental classroom activities designed to increase knowledge of world affairs and international understanding, and to yield useful information on the effectiveness of different approaches, methods, and materials. The project is

supported by the U.S. National Commission for UNESCO, a group of private citizens officially appointed to advise the U.S. Government.

The National Education Association was selected last year by the U. S. National Commission for UNESCO to direct the program. Nine schools, from five states and the District of Columbia, participated successfully in the project. Subject areas included science, music, home economics, mathematics, English, and social studies. The schools ranged in size from small suburban to large city systems, distributed geographically from New York to Virginia. The NEA Committee on International Relations served as a clearing house and service center for the project, answering questions, providing materials, and assisting in other ways. The U. S. National Commission for UNESCO asked the National Education Association to direct the Associated Schools Project again this year.—*Newsletter*, NEA, September–October, 1958.

#### NATIONAL TEACHER EXAMINATIONS—FEBRUARY 7, 1959

The National Teacher Examinations, prepared and administered annually by Educational Testing Service, will be given at 250 testing centers throughout the United States on Saturday, February 7, 1959. At the one-day testing session a candidate may take the Common Examinations, which include tests in professional information, general culture, English expression, and non-verbal reasoning; and one or two of eleven optional examinations designed to demonstrate mastery of subject matter to be taught. The college which a candidate is attending, or the school system in which he is seeking employment, will advise him whether he should take the National Teacher Examinations and which of the optional examinations to select. A *Bulletin of Information* (in which an application is inserted), describing registration procedure and containing sample test questions, may be obtained from college officials, school superintendents, or directly from the National Teacher Examinations, Educational Testing Service, 20 Nassau Street, Princeton, New Jersey. Completed applications, accompanied by proper examination fees, will be accepted by the ETS office during November and December, and early in January so long as they are received before January 9, 1959.

#### SUGGESTED ARTICLES TO READ

"Boys and Girls with Special Abilities," *NEA Journal*, Oct. 1958, pp. 469-81. (Reprints at 30 cents each or 10 or more copies at 20 cents each from NEA.)

"How Your Town Can Provide Scholarships for Needy Children," *School Management*, Oct. 1958, pp. 59-61. (How Fall River, Mass., does it.)

"How To Hire Teachers—and When," *School Management*, Oct. 1958, pp. 28-36. (Charles Richter, Superintendent of Niskayuna, New York, reports on his plans in his present position and at Newton, Mass., when he was a teacher and assistant superintendent.)

"Re-establishing Guidelines for the English Curriculum" by Dora V. Smith. *The English Journal*, Sept. 1958, pp. 317-26, 338.

"What Grammar Shall I Teach?" by Robert C. Pooley, *The English Journal*, Sept. 1958, pp. 327-33.

"Directing the School Paper" by James W. Olson, *The English Journal*, Sept. 1958, pp. 344-47.

"Tips for the Beginning English Teacher" by Elizabeth S. White, *The English Journal*, Sept. 1958, pp. 349-53.

"The German Gymnasium" by Stanley L. Combs, *California Journal of Secondary Education*, Oct. 1958, pp. 328-334.

"Smoking—An Administrative Headache" by Norman Schachter, *California Journal of Secondary Education*, Oct. 1958, pp. 339-43.

"Professional Requirements in Programs for the Preparation of High-School Teachers" by Morris L. Cogan, *The Journal of Teacher Education*, Sept. 1958 pp. 270-79.

"The Strategy of Concept Attainment" by Myron F. Rosskopf, *Teachers College Record*, Oct. 1958, pp. 1-7.

"Motivation for College in High-School Boys" by Eugene Stivers, *The School Review*, Autumn 1958, pp. 341-50.

"What Education Has To Learn from Psychology" by Percival M. Symonds, Oct. 1958, pp. 9-22.

"Discovering and Stimulating Culturally Deprived Talented Youth" by J Wayne Wrightstone, pp. 23-27.

"The Auditorium: Center of School Activities" by L. Edmond Leipold, *The Clearing House*, Sept. 1958, pp. 35-36.

"Attitudes of Teachers on School Behavior Problems Can Be Changed" by Howard V. Davis, *The Clearing House*, Sept. 1958, pp. 44-46.

"Staff Training for Administrators" by Alexander Jardine, *The Nations Schools*, Oct. 1958, p. 69.

"Better Communications with Teachers," *The Nations Schools*, Oct. 1958, pp. 70-71. (Part 2 of the Administrative Clinic. Part 1 in the Sept. 1958 issue, pages 46-47, discussed "Criticism: How To Deal With It." Part 3, "Flexible Grouping," appeared in the Nov. 1958 issue.)

"Teachers' Contracts Depend on State Statutes" by Lee O. Garber, *The Nations Schools*, Oct. 1958, pp. 84-86.

"Television in the Classroom," *The Nations Schools*, Oct. 1958, pp. 59-68. (five articles.)

"Design for a National Curriculum" by Paul R. Hanna, *The Nations Schools*, Sept. 1958, pp. 43-45.

"Teachers Rate Merit Rating" by Merle W. Tate and Charles F. Haughey, *The Nations Schools*, Sept. 1958, pp. 48-50.

"Never Forget: Teaching Comes First" by Clyde M. Campbell, *The Nations Schools*, Sept. 1958, pp. 51-52.

"College Mathematics in the High School" by D. M. Merriell, *The Mathematics Teacher*, Nov. 1958, pp. 556-57.

"Mathematics in the Junior High School" by Dwight W. Allen, *The Mathematics Teacher*, Nov. 1958, pp. 547-49.

"Let's Look at the New Mathematics and Science Teachers" by Ray C. Maul, *The Mathematics Teacher*, Nov. 1958, pp. 531-34.

"Principles for Salary Schedules" by H. I. Von Haden, *School Board Journal*, Oct. 1958, pp. 26-28.

"Planning the United States Gymnasium" by James L. Taylor, *School Board Journal*, Oct. 1958, pp. 44-51.

"Student, Groups, and Teaching Methods" by Wilbert J. McKeachie, *The American Psychologist*, Oct. 1958, pp. 580-84.

"Modernizing High-School Mathematics: A Symposium," *California Journal of Secondary Education*, Nov. 1958, pp. 420-48. Also in the same issue, "The Gifted Student in the American High School," by Paul Witty, pp. 389-401.

## UNESCO AUDIO-VISUAL MATERIALS

Many schools throughout the nation have found the materials prepared by UNESCO an excellent basis for teaching understanding of how people of many countries and races can cooperate, live, and work together. In addition to other materials, the following filmstrip are available for use in junior and senior high school: *Museums, Today and Tomorrow* (b/w. 36 frames, \$3.50); *Study Abroad* (b/w. 36 frames, \$3.50); *Tele-Clubs* (b/w. 42 frames, \$3.50); *The Bridge UNESCO Builds* (color, 101 frames, \$4.75); *Comenius* (b/w. \$3.50); *We're All In the Same Boat* (color, 97 frames, \$4.50); *Dollars at Work in the Middle East* (color, 95 frames, \$5.00); *Ten Years of UNESCO* (b/w. 44 frames, \$3.50); *Man Measures the Universe* (b/w. 46 frames, \$3.50). For complete information write to UNESCO Publications Center, U.S.A., 801 Third Avenue, New York 22, N. Y.

## DIFFERENTIAL APTITUDE TESTS

A special 4-page release has been issued as a supplement to the *Manual of the Differential Aptitude Tests* under date of May 1958. It is entitled "VR + NA—An Index of Scholastic Ability: Norms and Validity." This may be obtained from the publishers of the tests, The Psychological Corporation, 304 East 45th Street, New York 17, N. Y. *The Differential Aptitude Test* (DAT) are primarily counseling instruments. For this purpose, scores on the individual tests provide the critical information. Increased emphasis on early identification of the exceptionally able student has aroused interest in a secondary use for the DAT. Usually, though not always, this has come about as a by-product of the administration of the entire battery for counseling purposes. In several situations, combinations of DAT scores have been used to select students for admission, to place students for encouragement to continue their education and training. This has led to requests for norms on combinations of some of the *Differential Aptitude Tests*.

While a large number of combinations can be (and have been) made, one combination appears particularly suitable for these secondary purposes—the *Verbal Reasoning and Numerical Ability* tests. Traditionally the abilities measured by these tests have been represented in so-called intelligence tests, more properly called scholastic aptitude tests. In this supplement to the *Manual*, data are presented which indicate that this logical combination of scores is indeed an efficient predictor of academic achievement. Norms are presented for the sum of raw scores on the *Verbal Reasoning and Numerical Ability* tests.

A large body of experimental evidence substantiates the belief that the DAT *Verbal Reasoning and Numerical Ability* tests do, in fact, measure what is measured by intelligence and scholastic aptitude tests and are effective predictors of future academic performance. Some of the evidence demonstrating the usefulness of the combinations VR + NA as a measure of intellectual promise is summarized in the tables in the 4-page supplement.

## BIBLIOGRAPHY ON PSYCHOLOGY OF MENTAL DEFICIENCY

Dr. Hirsch L. Silverman, Director of Psychological Service of the Nutley Public School System, Nutley, New Jersey, has recently prepared an excellent 7-page selected bibliography related to the subject of mental deficiency. This bibliography includes books, pamphlets, and mimeographed materials. In-



cluded also is a list of 30 journals and periodicals devoted to this area or related to it. Dr. Silverman states that, as long as the limited supply lasts, single copies of this mimeographed bibliography will be sent to interested individuals and agencies concerned with this area of mental limitation. When writing to him for the single copy, please enclose eight cents in stamps to cover mailing cost.

#### ASSIGNMENT REPORT TO PARENTS

As an outgrowth of discussions between parents, faculty, and administration of the Rochester Junior High School of Rochester, Michigan, concerning problems of early adolescents, a letter-report was developed to alleviate at least one of the trouble areas—the failure to complete assignments. Because the first marking period includes seven weeks, followed by an eighth week of recording, ordinarily a first progress report did not reach the home until the ninth week. As a result of neglect, irreparable damage frequently had been done. The above-mentioned groups felt that an assignment report to parents at the end of the fourth week would be of potential assistance to all concerned.

In addition to the student's name and grade, the devised form includes an explanatory paragraph for parents and an invitation to arrange a conference with teachers or principal. The particular student's schedule, the number of assignments given, and explanatory teacher comments complete the report. Within a week the faculty completed the forms which were then mailed to parents. Since student help was utilized for the routine clerical work, office personnel were free for more pressing business.

Many parent-teacher and parent-principal conferences resulted from the enthusiastic response to the report. Although some teachers gave many more assignments than others, the work load seemed fairly well distributed. There are no present plans to enlarge upon the uses of this instrument. The principal is pleased that it has served its one purpose so well. He hopes that the regular report card system will suffice for the remainder of the year. A copy of this report will be mailed to anyone addressing a request to Principal, Rochester Junior High, Rochester, Michigan.

#### RESOURCE UNIT ON TEACHING CONTEMPORARY SCIENCE EVENTS

Teachers, administrators, and others interested in science education may secure a copy of the new free booklet *Teaching Contemporary Science Events*. This is a resource unit based on the experimentation of 25 master science teachers. The booklet is the result of a survey which disclosed that almost no material has previously been published on methods of teaching current science events. The booklet has been published by *Science Digest* magazine as a public service in a field which has been made even more important by the scientific advances disclosed by iron curtain countries during the last year. Included in the booklet are tested activities for students, suggested activities for teachers, and selected excerpts from the unit logs of teachers having taught contemporary science effectively. Requests for copies of the booklet should be made on school letterheads and only one copy per person can be sent, while the supply lasts. Send your request to Allan Carpenter, 200 East Ontario, Chicago 11, Illinois.

#### HORIZONS OF SCIENCE

*Horizons of Science* is a new and unique motion picture film program for American schools. Beginning in January 1959, it will appear in ten regular



releases a year. This 16 mm film series is conceived as a direct link between the ideas of science and the men and women of science—and the students in the schools. Its concern is with the “general public” of tomorrow. Professionally produced in full color and sound, this science series is designed to stir imagination, to broaden understanding, and to stimulate thinking, both among those students who may go on into careers in science and technology and, equally important, those who will go into other fields.

The series will be made available free of cost to schools through the public-service support of participating sponsors on a local community and regional basis. It is planned for intensive use in the seventh to the tenth grades, with considerable added uses above and below this level, in both auditorium and classroom. Each issue of *Horizons of Science*, running approximately twenty minutes, will present one, two, or more thoughtfully prepared film subjects of permanent interest and significance in science. Flexible in format, and wide-ranging in scope, the program will probe into many and varied areas of scientific endeavor. Now in production, for presentation in the coming months, are such subjects as the following: a study of the life and behavior of microscopic one-celled animals; a re-examination of Benjamin's Franklin's electrical experiments; the exploration of the edge of space; the zebra and its stripes; a first-hand report on genetical research in cancer, involving biochemistry, radiology, and mathematical laws of probability; a camera study of soap bubbles and light waves; a vivid demonstration of visual perception—the way we “see” the world around us; how a candle burns; and a view of the increasingly important “new” science of oceanography. As a permanent gift by the participating sponsor, successive issues of *Horizons of Science* will form a rich, continuing resource in the schools—a growing “science library on film” that may be used for many years.

A non-profit enterprise, *Horizons of Science* is produced in association with Educational Testing Service of Princeton, New Jersey. A regular and continuing evaluation of the effectiveness of the films in actual use will be carried out by Educational Testing Service. Preliminary planning and initial production of the series has been made possible by a grant from the National Science Foundation.

The subject matter of *Horizons of Science* is presented honestly and factually, without gimmicks or gadgetry. The assumption is made that young audiences are willing to go half-way, to pay attention and do a certain amount of thinking. Implicit in the program is a belief in the power and excitement of ideas—of intellectual content as opposed to “popular appeal.” At the same time, *Horizons of Science* is clear in presentation, sprightly in pace, and welcomes humor. Characteristically, subjects will be presented via “first-person” film reporting—through the eyes, and in the words of scientists themselves.

Issue by issue, *Horizons of Science* will show that science is not a world that exists apart from the rest of our world—that it is neither cold nor remote, nor beyond the comprehension of the interested, intelligent citizen. *Horizons of Science* reveals the scientist as explorer. It also shows scientists (who come in all shapes and sizes) as human beings.

Though virtually all schools have suitable 16-mm sound projection facilities, few school have adequate budgets for film itself. *Horizons of Science* is designed, therefore, to be presented free of cost to schools, as a community public service, by local business and industrial organizations, foundations, and others

who wish to participate in the program as sponsors. To the participating sponsor, *Horizons of Science* offers unique incentives as a public service, one which is genuinely needed, and which may be expected to bring unusual rewards in public goodwill. The objectives of the program are vitally important in national and community understanding of science, in encouragement of qualified students to pursue scientific and technical careers, and in recruitment.

The sponsor will make available to the schools in the community or area concerned an adequate number of prints of each issue of *Horizons of Science* to meet school needs. Prints are available to the sponsor on an annual basis (ten issues per year) at \$210 per print. A "presentation credit" to the sponsor will be carried in the titles of each print, without other advertising. The films are to be a permanent gift to the schools, remaining in their custody for reference and re-use through the years. Study guides, prepared with the assistance of Educational Testing Service, will be made available with each film. For complete information, write to *Horizons of Science*, 5 East 57th Street, New York 22, N. Y.

### VHF CHANNELS FOR EDUCATIONAL TV

The Joint Council on Educational Television, 1785 Massachusetts Avenue, N. W., Washington, D. C. on November 3, 1958, asked the Federal Communications Commission to make a thorough investigation of television allocations as a first step toward removing some of the serious obstacles to effective noncommercial telecasting, particularly in large metropolitan areas. The Joint Council, representing ten national education organizations, also asked the FCC to reserve very high frequency (VHF) channels for noncommercial educational broadcasting in five cities. Educational VHF channels (Channels 2-13) were requested for Rochester; the Norfolk-Portsmouth-Newport News area; Reno, Nevada; Waycross, Georgia; and Panama City, Florida.

The Joint Council stated in the formal pleadings that, although there were now 34 educational TV stations on the air, there are no educational TV facilities in such cities as Washington, D. C., Baltimore, New York City, Cleveland, and Los Angeles, principally because the channel which the FCC has reserved for these cities is an ultra high frequency (UHF) channel (Channels 14-83). UHF has proven to be a generally less satisfactory service. A total of more than 26 million people live in the above metropolitan areas. The Joint Council further stated that it believes steps should be taken to enable educational service to be provided and expanded by the use of VHF channels. "We cannot believe that it is in the public interest," the petition states, "to perpetuate an allocation pattern which provides for seven VHF commercial stations in two of the nation's largest metropolitan areas and relegates noncommercial educational broadcasting to UHF channels, which are seriously handicapped for general audience telecasting in these cities."

### 47 COLLEGES TO AWARD 60 P&G SCHOLARSHIPS

Forty-seven colleges and universities throughout the country, including 10 womens colleges, will award 60 Procter and Gamble scholarships for the 1959-60 school year as part of an educational aid program of nearly \$1 million a year, according to Howard J. Morgens, president of Procter and Gamble. The scholarship plan, in its fifth year, provides 240 four-year scholarships, one fourth of which are awarded each school year. In addition to full tuition and

an allowance for books and supplies, each scholarship provides an unrestricted grant of \$600 a year to the college. With 240 scholarships in force, the plan makes available to participating schools \$144,000 in unrestricted funds.

The funds accompanying scholarships are in addition to the P&G unrestricted-grant program which provides \$200,000 a year to leading universities and \$110,000 to state and regional associations of colleges and universities. Additional unrestricted funds are made available under the company's fellowship program which provides \$1,200 to universities for each of the 30-odd full-time fellowships sponsored by P&G each year. Over-all, unrestricted grants total more than \$490,000 a year, more than half of the P&G annual contribution to education.

In addition to scholarships and unrestricted grants, the P&G program next year will include fellowships at graduate schools, plus a number of specialized research projects in such fields as dermatology, dental research, and nutrition. The program also makes provision for \$80,000 to support special educational and scientific projects, and for gifts to such funds as the National Fund for Medical Education and the United Negro College Fund.

### TAX MONEY FOR CLASSROOM RESEARCH

Can television, radio, and films be used even more effectively in the classroom? The Federal government has put up a half million dollars to find out. The U. S. Office of Education announces that it is now prepared to consider applications for Federal funds to support research projects in the communications field. This money comes from the recently enacted National Defense Education Act. This Act authorizes 3 million dollars for research for the first year, and 5 million dollars for each of the three succeeding years. An initial appropriation of \$500,000 was made to get the program under way.

### BOREDOM AND DELINQUENCY

An official of the National Education Association blames part of juvenile delinquency on boredom. William Kvaraceus told a convention of New Jersey teachers that some students get into trouble because, in his words, "the high school is careful to skirt and detour real-life problems." He also claimed that youths in trouble said their classes were stale and boring. He believes that high-school courses should go into the controversial issues and dispel this boredom from the classrooms.

### NEA EDITORIAL CENTER IN NEW YORK CITY

A likely news conference for New York City's press corps "baptized" NEA's new Editorial Information Center in Manhattan which opened October 2. The new Center widens the scope of the NEA Radio-Television office, which was inaugurated in New York City last year, into a broader editorial information service. It will provide rapid and complete current information and background material on all facets of education to press associations; radio and television networks; national, general, and news magazines; Sunday newspaper supplements; national newspapers; feature syndicates; motion picture producers; writers; and public relations directors whose headquarters are located in or near New York City.—*NEA News*.



## SINGLENESS OF PURPOSE

For nearly half a century Devereux has been devoted to the single purpose of developing to the fullest the thousands of boys and girls who have been entrusted to it for education and guidance.

In that time, techniques have improved and facilities for special education have grown as the program has developed into the fully staffed "multidisciplined" approach used today.

This *singleness of purpose*, which has helped the Schools serve children, parents, and referring physicians in the past, will continue to guide the Schools in their progress in the years ahead.

*Professional inquiries should be addressed to Charles J. Fowler, Registrar, Devereux Schools, Devon, Pennsylvania; western residents address Keith A. Seaton, Registrar, Devereux Schools in California, Santa Barbara, California.*

### THE DEVEREUX FOUNDATION

*A nonprofit organization  
Santa Barbara, California*

*Founded 1912  
Devon, Pennsylvania*

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## SCHOOL BOARDS PRESIDENT SCORES READERS DIGEST

Lawyer Carl B. Munck, president of the National School Boards Association, in a strongly worded letter sent to Reader's Digest Editor DeWitt Wallace labels the magazine's continuing circulation of articles about school "palaces" a "cynical campaign" to shake the American citizen's faith in the good sense and integrity of his local school-board member. President Munck, whose organization represents some 51 federated state and territorial school associations, made special reference to the reprint in the October 1958 *Digest* (which he says was "exhumed 14 months after its original publication") of an article by Dorothy Thompson called "Must Schools Be Palaces?"

## RARE BROADSIDE OF GETTYSBURG ADDRESS

By gift from Alfred Whital Stern of Chicago, the Library of Congress has acquired a curious and possibly unique copy of a broadside of the *Gettysburg Address*. No information appears on the broadside to furnish the place or date of printing, but the typography suggests it may have been printed almost contemporaneously with the event. The caption reads: "Oration/of/Abraham Lincoln/at/the dedication/of the/Gettysburg National Military Cemetery,/November 19, 1863." The text is the version of the address that was used in the report of the Pennsylvania Committee appointed to establish and dedicate the Soldiers' National Cemetery at Gettysburg. It varies slightly from the texts of the manuscripts in the Library of Congress that are known as the first and second drafts. In the broadside, the word "power" is not qualified by "poor," and the phrase "under God" is included in the closing sentence. The broadside has been added to the Alfred Whital Stern Collection of Lincolniana, formed by Mr. Stern and presented to the Library of Congress in 1950. The Library will undertake a study of the document with a view to establishing its origin. It was formerly in the collection of the late Anton Heitmuller of Washington, D. C.

## "THE ALPHABET CONSPIRACY" ON NBC-TV

The scientific study of language, which includes not only linguistics but also physiology, psychology, physics, and anthropology, will be presented in "The Alphabet Conspiracy," the newest television program in the prize-winning Bell System Science Series, which will be seen over NBC-TV, Monday evening, January 26. *The Alphabet Conspiracy* shows that language is based on speech rather than the written word and shows motion pictures of the vocal cords and the human speech-producing mechanism in action. It shows how the families of languages developed and some of their similarities and differences, and it discusses the relationship between languages and cultures. One section of the program is devoted to dialect geography, or the location of a person's home by his speech. The final section of the program shows some of the modern machines that have been developed both to study and to utilize language. *The Alphabet Conspiracy* will be available on 16-mm color film on loan from Bell Telephone Companies for showings in classrooms after January 26.

## DEDICATION TO NEA'S NEW EDUCATION CENTER

The building that the faith of more than a half-million American teachers built—the Education Center of the National Education Association—is to be dedicated during two days of special ceremony in the Nation's capital, February

## **NEW GREGG BOOKS**

### **SALESMANSHIP FUNDAMENTALS**

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8-10. Called the "miracle on Sixteenth Street" by Frank W. Hubbard, NEA Assistant Executive Secretary for Information Services, the new home of the world's largest professional organization is a monument to the American teacher and to the Association which is dedicated to the "welfare of children and to the education of all people." Dr. Hubbard is general chairman of the Dedication Days planning committee.

The gleaming 8-story structure of blue-green glass and white marble represents a \$7,000,000 investment by more than a half-million teachers and members of affiliated educational organizations. Funds to build the Center were raised during a five-year campaign which was launched in 1953.

"Formal recognition of the miracle of the new building is the purpose of the Dedication-Days," Dr. Hubbard said in announcing special ceremony plans. "D-Days will be observed here and 'out there,' where more than 1,000 local associations are now making plans for community observances."

Among the distinguished guests invited to witness the D-Days ceremonies will be members of Congress, government officials, NEA officers, state directors, presidents and executive secretaries of state education associations; and a representative group of presidents of local education associations. The guest list also includes representative members of the NEA and departmental staffs.

At the final session on Tuesday night, February 10, Dr. Carr will sum up the Dedication-Days observances following a brief candlelight ceremony which will symbolize the "We Here Dedicate" theme. Music will be provided by the NEA Choral group; and Robert A. Luke, president of the NEA's Staff Organization, will present a gift from the Organization for the new building.

#### SURVEY OF THE SECONDARY-SCHOOL TEACHER AND LIBRARY SERVICES

The first nation-wide study of the secondary-school teacher and library services, conducted as a project of the joint committee of the NEA-American Library Association, reveals that the "school library is now an integral part of American public secondary-schools in urban areas." Much is to be desired, however, as far as the adequacy of school library materials is concerned. High spots of this initial survey, made by the NEA Research Division and the American Association of School Librarians, are reported in the October 1958 issue of the *NEA Research Bulletin*. Copies of the *NEA Research Bulletin* may be received regularly through a special subscription at \$3 per year, or single copies at 80 cents each with special discount rates for quantity orders. Write to the NEA Research Division, 1201 16th Street, N. W., Washington 6, D. C.

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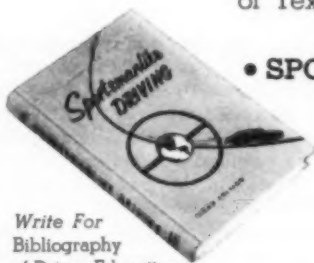
The Co-operative Office Education Program is open to qualified commercial course seniors interested in direct office work experience. Two students are assigned to one job. They alternately spend one week on the job in full-time employment and one week at school. Upon graduation these students become full-time employees of the co-operating firms.

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school in the morning and work in the afternoon. School time is spent studying selling techniques, store and window displays, and store organization and management.

The third program is the Work Experience Plan, which serves students from grades 9 to 12. These students attend schools in the mornings and are employed in the afternoons in a variety of school-supervised jobs.—*School News and Views*, October 15, 1958, Philadelphia, Pennsylvania, Public Schools.

### YOUTH AND WORK

To meet the need for practical how-to-do-it help for industry, community leaders, and youth workers who want to help teenagers in the various stages between school and employment, a specially prepared newsletter, *Youth and Work*, is, for the first time, being offered to interested subscribers. This newsletter was originally started at the request of a group of youth-serving agencies. Until now, it has been privately circulated to a limited selected list. It is now available at \$1.50 per year to anyone interested in the problems of young people, with special rates for group subscriptions of five and ten. "In its new modern format, *Youth and Work* is providing actual blueprints for programs for use in recruitment, guidance, counseling, job placement, career planning, schoolwork, and dropout programs," according to Lila Rosenblum, editor. "Each issue provides concise reports and case histories together with practical information on current techniques and trends and a special department devoted to sources of information," Miss Rosenblum states. Forthcoming issues will feature: "How to counsel and place the delinquent child," "How teenagers can find jobs in a tight labor market," "How to help school dropouts," "Which new counseling techniques are producing results?" *Youth and Work* is published by the National Child Labor Committee, 419 Fourth Avenue, New York 16, New York.

### STAY IN SCHOOL

Today, all services encourage young men and women to stay in secondary school until they graduate. In many cases, it is preferable to go to college before entering the service. A Department of Defense instruction, dealing with education, has been issued to "provide the military departments with policy guidance for both active and reserve recruiting elements in dealing with secondary-school authorities." It states: "Students in secondary schools will be encouraged by recruiters to stay in school and graduate. Students enrolled in secondary schools will not be accepted for active duty enlistment without prior notice to the school and without parents' consent." High-school graduates who enlist in the service often are rewarded in several ways for having finished school. A high-school diploma opens up certain types of technical or advanced training. Some graduates are eligible to compete for appointments as commissioned officers.—*High School News Service Report*, September 1958, p. 18.

### THOSE SOVIET SCHOOLS

What are some things to remember about Russian education? *Changing Times*, the Kiplinger magazine, in its June, 1958, issue, lists several points to keep in mind when discussing the efficiency of Soviet education:

1. All U.S.S.R. students take rigid national exams in order to pass the fourth, seventh, and tenth grades.
2. Above the secondary level, the government fixes quotas for enrollment in various fields and assigns graduates to jobs.

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3. Political supervision and indoctrination permeate all schooling.

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5. School and home assignments are so heavy that several prominent physicians once complained publicly that students were suffering from "chronic over-exhaustion, frequent headaches," and other ailments.

6. A graduate from a higher institution doesn't get his own diploma. It's mailed instead to his future employer.—Joseph Green, *The Clearing House*, September 1958, p. 38.

### OUR BULGING ENROLLMENTS

No letup can be expected in demands for additional school staff and facilities in the next 25 years. So says N. L. Engelhardt, Jr. in a report issued by Engelhardt, Engelhardt, Leggett, and Cornell, Educational Consultants. The eight-page report, *Estimates of Future Enrollments*, indicates that even though the number of marriages has been declining since 1946, the number of births has been steadily increasing. This means that school enrollments will continue to rise in the elementary grades at least through 1964 and in the secondary grades at least through 1970. The facts are these:

- for every 100 pupils in grades 1-6 today, there will be 111 in 1964.
- for every 100 pupils in grades 7-9 today, there will be 125 in 1964.
- for every 100 pupils in grades 10-12 today, there will be 126 in 1964.

And after that date, the problem may become even more acute as the large numbers now in school begin new families.

Another factor that will account for steadily increasing secondary-school enrollments is the greater percentage of youngsters who will be graduated. Improved guidance techniques and expanding curricular offerings will mean fewer dropouts. At present, only about 60% of the pupils in sixth grade can be expected to complete twelfth grade. It is possible that this figure might get as high as 80% in the next few years.

College facilities, too, will be severely taxed. Even figuring that only 60% of today's sixth-grade pupils will be graduated from high school, college enrollments in the first two years of college will increase by 44% by 1966 and by 66% by 1976. Dr. Engelhardt has included a formula in his report to enable each community to compute its own rate of growth in school enrollment and compare it to the national norm. A limited number of copies of the report, which has been sent to principals and superintendents in the United States, are available on request from Engelhardt, Engelhardt, Leggett and Cornell, 221 W. 57th Street, New York City, 19, New York.

### TYPEWRITING IN THE ELEMENTARY SCHOOL

A major research program to explore the use of the typewriter as an aid to basic learning among fourth- and fifth-grade children is to be carried on by three universities during the 1958-59 school year. The project—aimed at obtaining conclusive information in this field—is being conducted by the Boston University School of Education, Columbia University Teachers College, and the College of Education of the University of Illinois, with grants provided by Royal McBee Corporation. The research at the University of Illinois will be

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under the direction of Dr. Walter J. Moore, associate professor of education; at Columbia University Teachers College under Dr. Lawrence W. Erickson, professor of education; and at Boston University under Dr. Donald D. Durrell, professor of education.

Each institution is pursuing its own independently developed research plan, but the end purpose of each study is to determine the influence of use of the typewriter on the educational development of elementary-school children in basic areas, such as reading, spelling, social studies, arithmetic, creativity, and handwriting.

Plans announced by the universities provide mainly for regular classes to be equipped with portable typewriters—with a typewriter for each student. For certain studies, the number of typewriters available will be varied, with as few in some instances as three per class. Pupil performance in basic subjects in many of the classes will be compared with the results in control classes in which no typewriters are used. Together, the tests will include more than 40 classes in some 30 elementary schools. Findings of each of the research projects will be published following completion of the 1958-59 school year.

### THE ESSENTIAL PURPOSES OF EDUCATION

Those who would make the country's educational system a scapegoat for technological and other reverses have neglected to examine the picture for what it is, President Carroll V. Newsom of New York University states in his annual report to the institution's Board of Trustees.

"The chief culprit can be found only when the citizen looks into the mirror," he declared. In this country, unfortunately, students and parents, and citizens generally, have associated educational opportunity with social and economic status, not with service to humanity. "What's in it for me?" has replaced "How can I prepare myself to serve others?"

"Although personal ambition may be a normal and healthy attribute, the present misdirection of the public's interest in education subverts its true function as the very foundation of our kind of civilization. One of our nation's major needs is to educate its citizens on the subject of education itself. We must all share the blame for the ignorance and misunderstanding that is prevalent."

One consequence of these "widely accepted but distorted values," he added, is the failure to give adequate support to schools and colleges. Americans in general are a progressive, loyal, and generous people; thus their insistence that colleges and universities operate upon a bare subsistence level in an age of plenty provides strong evidence of an inherent lack of understanding of education if not a lack of respect for educational endeavors. Indeed, it is apparent that our citizens do not comprehend the essential needs of the age, including the nature of the present challenges of our country. They need to be told again and again of the essential purposes that education serves on their behalf."

### NATIONAL EDUCATION ASSOCIATION ANNOUNCES 1959 LEGISLATIVE GOALS

Federal legislation designed to build more schoolhouses and to pay teachers improved salaries will be the goal of the National Education Association in the next session of Congress. This decision of the NEA Board of Directors was

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announced by J. L. McCaskill, executive secretary of the NEA Legislative Commission.

In effect, this places the NEA squarely behind enactment of a refined version of the \$4.5 billion Murray-Metcalf bill introduced in the last Congress. This proposal was sidetracked in the 85th Congress by passage of the National Defense Education Act—a law including student loans, fellowships, and general strengthening of guidance, science, mathematics, and foreign language programs in the elementary and secondary schools.

The NEA Board declared: "In order to provide an adequate basis for quality education, the NEA urges a massive infusion of Federal funds to be used by the states and localities for teachers' salaries and to build classrooms as seems necessary in the discretion of the state. We urge the support of a large-fund proposal of the Murray-Metcalf type be the major NEA legislative objective until such legislation is enacted."

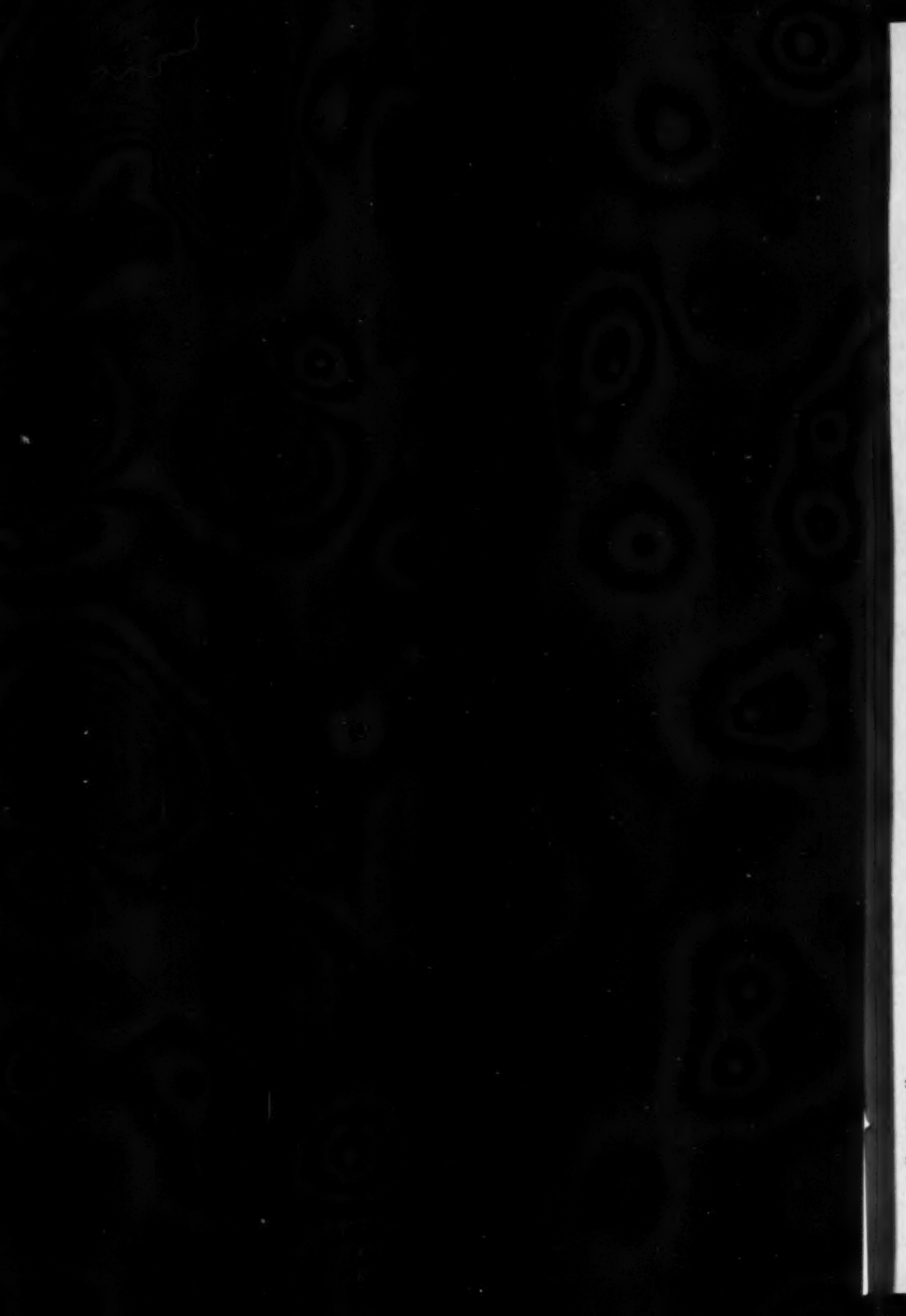
The Murray-Metcalf support measure would provide for a Federal payment of \$25 for each school-age child the first year, or an appropriation of \$1.1 billion. This payment would rise \$25 a year to \$100 a child in four years.

Dr. McCaskill said that "a wide gap exists between our ideal of educational opportunity for all American youth and the ability of our schools to approach that ideal." He cited recent U.S. Office of Education statistics which show a continuing shortage of 140,000 classrooms in America, and a large number of teachers with sub-standard certification who are and will be employed to instruct the next generation of Americans.

Turning to the old bug-a-boo of Federal control, Dr. McCaskill explained: "The Murray-Metcalf bill breaks away from the pattern of previously introduced grant-in-aid bills for education. First of all, it is not conceived as a 'Federal aid' bill—a dole to the schools as if they were the objects of charity. Rather, it is an attempt to rectify the present imbalance of school support by which the Federal government contributes only four cents out of every dollar of revenue for public schools below college level. The Murray-Metcalf bill makes it possible for the states to choose how they want to use their allocation, and how to apply the appropriations they will be scheduled to receive after enactment into law.

"The Murray-Metcalf bill clearly spells out that there shall be no Federal intervention in schools, the curriculum, and the instructional program. Specifically, the states may use all of their allocation for school construction and the purchase of basic instructional equipment. As an alternative, they may devote all of their allocation to the increase of teachers' salaries. Or, as a middle way, each state may decide that it will use part of the funds for teachers' salaries and part for school construction and equipment."





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